

**THE  
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**The Danger of Decay**

THE serious position of the shipbuilding industry was graphically described by Dr. John T. Batey in his presidential address last Friday to the North-East Coast Institution of Engineers and Shipbuilders. What is true of the shipbuilding industry is true of other great basic industries—including the manufacture of railway equipment—upon which the wealth of this country has been built up. Dr. Batey referred to the phenomenal progress of productive capacity and industrial efficiency in recent years. As examples he instanced the improvements in locomotive design, auxiliary machinery and especially machine tools which have contributed so greatly to efficiency. Mechanical science, he said, was progressive, and in spite of the suggestions made in certain quarters it was impossible to call a halt. But, in fact, progress is seriously obstructed by a demand for the output of industry so meagre as to thwart enterprise. Dr. Batey, quoting the latest shipbuilding statistics, said that only 29 per cent. of our building berths are occupied in spite of the fact that 149 berths have been scrapped in an endeavour to rationalise the industry. The number of insured men in the shipbuilding industry has fallen from 204,500 in 1929 to about 150,000 in 1935, while the number of men unemployed is about 67,000, many of whom have not done any work for from two to four years. In spite of the large unemployment figures, said Dr. Batey, we should not be able to cope with a shipbuilding boom should it occur, for the older generation of skilled artisans was gradually dying out. This position would be especially serious should any emergency suddenly arise requiring a large output—and other basic in-

dustries are in a similarly deplorable condition. It is time there was an awakening to the risks not merely of gradual decay, but of the danger arising from our having allowed decay to proceed so far already. It is fortunately becoming apparent that to go short, as the people of this country are now doing, when every material want could so easily be satisfied, is not merely absurd but dangerous.

\* \* \* \*

**Ministerial Regulation of Transport**

Sir Cyril Hurcomb, President of the Institute of Transport, made his address at the inaugural meeting of the session of the Metropolitan Graduate and Student Society an opportunity to explain the machinery whereby the Ministry of Transport exercises its control over the undertakings within its purview—a control which, he said, aimed at being both economic in technique and sympathetic in temper. His paper was calculated to combat the attitude among newcomers to the transport industry that intervention in their affairs from Whitehall is to be endured only because it cannot be cured. As an instance of its value, he quoted the advances in railway safety which have followed the recommendations contained in the reports on accidents by the inspecting officers. Less appreciated in its early days, perhaps, was the Ministry's power to collect and publish statistics of railway operation. Figures are not every man's meat, and the Ministry's addiction to them in bulk may appear to some, particularly to those charged with furnishing the data in the prescribed form, among its least endearing qualities. The contribution of such material to operating efficiency is, however, now acknowledged, and Sir Cyril suggested that its value would be further enhanced if some such standard mode of presentation as has been evolved in this country was universally adopted, so as to facilitate international comparisons.

\* \* \* \*

**The Week's Traffics**

Coal class traffics for the third week in succession show an increase on each of the four group railways. For the corresponding week a year ago coal increases were recorded only by the L.M.S.R. and the Southern, but each of the companies had an advance in merchandise earnings. The aggregate receipts of the four companies together for the 42 weeks of the present year amount to £122,127,000, an increase of £851,000 or 0.70 per cent. Passenger train traffics for the year to date have reached £56,192,000 for the four companies together, an improvement of £1,177,000 or 2.14 per cent. Merchandise earnings of the four companies for the 42 weeks show a net decrease of £40,000, as compared with a net decrease of £65,000 at the end of the previous week. The net aggregate decrease in coal class traffics of the four companies has now been reduced from £319,000 to £286,000.

	42nd Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R.	2,000	16,000	14,000	28,000	572,000	+1.18
L.N.E.R.	1,000	4,000	13,000	10,000	4,000	+0.01
G.W.R.	6,000	13,000	3,000	10,000	121,000	+0.59
S.R.	11,000	—	3,000	14,000	154,000	+0.93

London Transport receipts for the week show an improvement of £10,800. The Great Northern Railway (Ireland) is now £45,150 to the good on the year, and the Great Southern is up £116,022.

\* \* \* \*

**A Glasgow Railway Memory**

Last week *The Glasgow Evening Times* made the discovery (somewhat belated) that the present year marks the centenary of incorporation of an interesting little Clydeside railway, namely, that between Paisley and Renfrew. Actually the Paisley & Renfrew Railway Company

was incorporated by Act of July 21, 1835, and its 3½-mile line was opened on April 3, 1837. It was built to the early Scottish standard gauge of 4 ft. 6 in. As our contemporary points out, the opening of this line in 1837 coincided with the decision for the construction of railways between Glasgow and Ayr, and between Glasgow and Greenock. Both lines passed through Paisley, and the section between the city and Paisley became known as the Joint Line, and continued as such until the formation of the L.M.S.R., which absorbed both its parents. In its early days the railway between Paisley and Renfrew developed a considerable amount of traffic, but Wishaw forecast in 1840 "we fear that the opening of the Ayrshire line will cause . . . traffic to fall off considerably," which indeed happened, and when the railway to Greenock became available the traffic on the Paisley-Renfrew line was so reduced that horse power was substituted for locomotive power. On July 22, 1847, Parliament authorised its sale (as from December 2, 1846) to the Glasgow, Paisley, Kilmarnock & Ayr Railway, which afterwards became the Glasgow & South Western Railway. The Renfrew line was connected with the Joint Railway at Greenlaw, to the east of Paisley Gilmour Street station. As *The Glasgow Evening Times* remarks, at certain periods of the day the crossing of traffic at the junction of this short line with the main line between Glasgow and Paisley still makes quite an interesting and busy spectacle.

\* \* \*

#### Overseas Railway Traffics

For the past fortnight the Argentine exchange has averaged 17.02 pesos to the £, comparing with 17.08 and 17.07, respectively, for the two corresponding weeks of last year. Recent Argentine railway traffics have not been particularly stimulating except that during the past two weeks the Buenos Ayres & Pacific has added £19,301 to its increase, and the Buenos Ayres Great Southern has reduced its decrease by £10,358. The Central Argentine had to contend with two wet days and the Cordoba Central with four days' rain last week, and Entre Rios traffics for the fortnight are down £4,703. In currency receipts to date the Buenos Ayres & Pacific has an increase of 671,000 pesos.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific	16th	77,380	+ 10,303	1,164,437	+ 54,388
Buenos Ayres Great Southern	16th	116,745	+ 6,727	1,904,132	- 31,648
Buenos Ayres Western	16th	30,435	- 7,644	626,649	- 26,906
Central Argentine	16th	108,311	+ 988	1,890,655	- 79,629
Canadian Pacific	41st	679,400	+ 126,400	19,750,600	+ 496,600
Bombay, Baroda & Central India	27th	237,525	+ 21,600	4,041,900	- 24,075

By its aggregate increase of £496,600 in gross earnings the Canadian Pacific is in sight of a considerable reduction in the net earnings decrease of £508,200 recorded up to the end of August.

\* \* \*

#### Propaganda by Railway Servants

Our American contemporary, the *Railway Age*, quotes some striking examples of how Baltimore & Ohio train conductors have secured additional business for the company by intelligent anticipation of travellers' requirements. From April to June inclusive, six conductors on New York-Washington trains sold transport to the value of \$2,963 (collecting the money on the spot) by this means. One of their number, Conductor Cole, has disclosed his methods in the company's magazine. When issuing tickets to passengers on the train, he asks whether the point to which they book is their ultimate destination or merely a break of journey. Such inquiries are normally not resented, because he is able to explain that a through ticket

to their journey's end will save money and trouble (quite apart from ensuring their patronage to his company throughout). Destinations of passengers unwilling to discuss their business may be deduced from luggage labels, and folders showing the appropriate B. & O. services can then be left in prominent positions. Many of the minor duties that fall to the lot of the conductor can be made to yield similar clues, and this knowledge doubtless adds to the zest with which such services are performed. The influence of Conductor Cole and his companions thus extends far beyond their regular "beat."

\* \* \*

#### Repainting at Marylebone

The repainting now in progress at Marylebone, L.N.E.R., deserves to be considered as among the most successful enterprises in the company's campaign against station seediness. Green is the predominant colour, and is particularly effective as applied to the girders in the roof, where, against a background of cream panels and eaves, it creates an invigorating impression of sylvan airiness and space. A glance overhead should help to dispel the Monday morning feeling among suburban passengers in a profitable fashion, by leading their minds irresistibly to thoughts of country outings at the next week-end. No less satisfactory is the embellishment with cream paint of the normally drab exterior woodwork of the goods station and warehouses. It will be remembered that although the Great Central Chairman, Sir Edward Watkin, had reconciled the angry cricketers of Lords to the idea of a tunnel underneath their ground by the time the company's Bill made its second appearance before a Parliamentary Committee on March 21, 1892, vigorous but unavailing opposition still proceeded from two hundred members of the artists' colony in St. John's Wood, represented by the late Sir Lawrence Alma-Tadema, R.A. The present repainting may therefore be considered as a belated but adequate concession to local æsthetic ideals.

\* \* \*

#### High Speed on 3 ft. 6 in. Gauge

Hitherto the highest speed achievements on the 3 ft. 6 in. gauge have been in Japan and Java, where, apart from the restriction of gauge width, the grading and alignment of the main lines permit the maintenance of speeds averaging 45 to 47 m.p.h. between stops over long distances. In South Africa, until now, the railway management, hampered in some of the most populous regions—such as Cape Colony—by heavy grades and sharp curvature, has been content with considerably lower speeds than these. But a recent trial with one of the "19C" Class 4-8-2 locomotives built in Great Britain last year, has revealed some remarkable speed possibilities. With a light train of 131 tons, No. 2463 showed itself capable of maintaining speeds of 60-62 m.p.h. up 1 in 80 gradients. Remarkable powers of acceleration were also shown, such as from 25 to 58½ m.p.h. in ¾-mile slightly falling, or up a 1 in 80 gradient to 49 m.p.h. in no more than 1½ miles. Perhaps the most notable feat of all was the maximum speed of 67½ m.p.h. with 8-coupled 4 ft. 6 in. wheels, representing 420 r.p.m. Altogether the exploits of these new locomotives, as detailed in our article on page 689, indicate the great development in the steam locomotive brought about in the last few years by careful attention to detail. There can be little doubt that the study of steam flow through the cylinders has been largely responsible for the development, and the R.C. poppet valve mechanism used in these new South African locomotives would appear to be well vindicated. The general result is a tribute to the enterprise of Mr. A. G. Watson, Chief Mechanical Engineer of the South African Railways.



### Difficulties of Operation in Australia

In the course of a recent interview, Mr. M. A. Park, Secretary of the Railway Circle of Australia, gave some interesting facts regarding the railways in that Dominion. Emphasising the heavy gradients on the main lines, he said that in New South Wales 1 in 30 grades were common, particularly where the Western Division line crosses the Blue Mountains, 36 miles west of Sydney. Here there are 12 consecutive miles at 1 in 60, followed by 20 with grades varying from 1 in 31 to 1 in 51, and severe curvature also. The Caves Express, the fastest train on the division, covers the 31.5 miles over these grades in 74 min., inclusive of four intermediate stops. Loads are limited to six cars, or 160 tons, with which the NN class, 4-6-0 type engines maintain speeds up to about 24 m.p.h. over the 1 in 31 gradients. On the other hand, the Sydney-Newcastle expresses also have to negotiate heavy grades of from 1 in 40 to 1 in 75: speeds of 26 m.p.h. are scheduled over continuous 1 in 40 and 1 in 50 gradients, and the overall 104 miles between these places are covered in 2½ hours, with three intermediate stops. It will thus be seen that the hill climbing which is so frequently necessary is very good and is, in fact, the feature of these New South Wales main line express performances.

\* \* \* \*

### Train Cruises for Children as well as Adults

Turning to another operating speciality in New South Wales, Mr. Park mentioned the increasing popularity of train cruises, which have been run for the past six years in that State. The cruising trains are made up of four sleeping and two observation cars, all first class, and accommodate 80 passengers, in two-berth compartments. For a 1,500-mile rail-cum-motorcar cruise, occupying four days and five nights, the inclusive charge is only £10. The latest form of train cruise is, however, for school children. Separate cruises are run for boys, in May, and girls, in October, to the most interesting parts of the State. At an inclusive cost of £5, the children are taken on a seven days' cruise covering about 2,000 miles. The educational value of these cruises is remarkable and the moderate charge enables a wide circle of children to enjoy them. It is significant, however, that in all these cruises, catering is generally arranged in hotels, as this has proved the most satisfactory solution of that problem: it would, however, be unlikely to be popular if introduced in this or in most other countries, and one must therefore assume that the convenience claimed for this particular arrangement is based upon unusual local conditions prevalent in Australia.

\* \* \* \*

### An Ungated Level Crossing

Under the Light Railways Act, 1896, gates need not necessarily be provided at public road level crossings. Their installation, where considered necessary, was to be as prescribed in the relevant Light Railway Order. Such an order, in 1898, for the Sheppey Light Railway ordered gates at four crossings, and two other crossings have since been equipped. A public road crossing for which gates have not been provided is that immediately adjacent to Minster-on-Sea station. A collision between a passenger train and a motorcar, in which a passenger in the latter was killed, occurred there on April 26 last, under circumstances which were investigated by Colonel Woodhouse, whose report is summarised on page 695 herein. This remarks that, without the knowledge of the responsible authorities, the porter employed at the station was ordered to signal trains over the crossing. As, however, his hours of duty did not cover the whole of the time during which trains ran, there was a period when no flagman

was on duty. The driver of the car knew about the flagman, but at the time, 7.10 p.m., of the approach of the train, the man was off duty and so she was not warned, and the collision resulted. The gates at the six crossings mentioned above stand normally across the railway and are opened for a train to pass, and then again closed by one of the train crew. Colonel Woodhouse recommends that if the traffic at Minster-on-Sea does not warrant any additional staff, gates be similarly provided at that station.

\* \* \* \*

### Fires in Power Signal Boxes

The highly developed nature of the apparatus used in modern power signal boxes, and the extensive concentration of control which it usually represents, make it imperative to take the utmost precautions against fire, with its risk of paralysing traffic over large areas. It is hardly conceivable that a perfectly fire-proof equipment could be constructed, even at great cost, but the causes which lead to fires can be reduced to a very small quantity, and steps can be taken to ensure that any outbreak can be rapidly detected and kept within limits by staff trained in the use of extinguishing equipment. A fire this year in a signal box near Cleveland on the New York Central, which did great damage to the relay room, led to the adoption of improved arrangements for renewing relays without making disconnection at terminals, as is now being done, in fact, at some of the latest boxes here, and a tube was put in from the relay room to the locking frame, so that fumes arising from something burning will be quickly detected by the signaller, who can then take the necessary steps to deal with the outbreak. A special additional cut-out switch has also been installed on a post a short distance from the box, whereby the power can be cut off from the cables before they actually pass into the building.

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### High Boiler Pressures in America

Although several locomotives in the United States carry a working pressure of over 300 lb. per sq. in., the normal stayed firebox is found only on a few Delaware & Hudson machines and on two locomotives on the Baltimore & Ohio Railroad, which latter, operating at a pressure of 350 lb. per sq. in., have covered 382,000 and 192,000 miles respectively. Eight further 350 lb. locomotives on the same railway, including the new engines *Lord Baltimore* and *Lady Baltimore*, have water-tube fireboxes and fire-tube barrels, and between them have built up a mileage of 1,500,000 since the first one was placed in service in 1927. The two-cylinder Pacific locomotive of the Delaware & Hudson has a normal-type boiler working at 325 lb. and when hauling a 625 ton train over a 77-mile division at an average of 46 m.p.h. consumes about two tons of mixed anthracite and bituminous coal. After increasing the working pressure of 90 Mallets of the 2-8-8-2 type from 240 to 270 lb. per sq. in. (and thereby increasing the tractive effort from 101,000 lb. to 114,000 lb.), the Norfolk & Western Railroad put into service 20 Mallets with a working pressure of 300 lb. and ordinary fireboxes. This was done simply to make full use of the adhesion (for the loading gauge prohibited the adoption of larger cylinders), and no increased thermal efficiency is claimed as the valve gear is a duplicate of that of the previous machines and does not permit the full expansion of high-pressure steam in one set of cylinders. Experience with numerous locomotives in America having normal fireboxes and working pressures of 270 to 325 lb. shows that as the boilers get older the maintenance cost does not rise any higher than that of lower pressure units.

## Buenos Ayres Western Railway

**C**ONTINUED loss on exchange and additional labour charges, coupled with the uncertain outlook and the need to conserve resources, were the main reasons leading the directors of the Buenos Ayres Western Railway Company to recommend the distribution of only half the dividend on the  $4\frac{1}{2}$  per cent. preference stock for the financial year ended June 30, 1935. Gross receipts were lower by £98,913, or 2.74 per cent., and working expenses rose by £110,674, or 3.90 per cent. The actual loss on remittances was £438,463 (against £259,241), but after crediting currency surplus on floating assets, the net loss is £310,544, compared with £347,362. Among the sundry credits is to be noted a dividend of £59,613 from the Railway Petroleum Company, against £29,190 for the previous year, but the balance brought in from 1933-34 is £168,173, compared with £189,542 from 1932-33. The smaller dividend on the  $4\frac{1}{2}$  per cent. preference stock makes a difference of £57,428, but the amount to be carried forward is reduced to £55,433.

Suburban passenger traffic benefited in the months of October, 1934, and May, 1935, by the Eucharistic Congress and the visit of the President of Brazil, respectively, but during the remainder of the year returns were adversely affected by the intense and continually extending omnibus and collective taxi services. Main line bookings, however, in spite of road competition in several districts, more than made good the decrease in the suburban area, and the improvement was by no means confined to the two special months mentioned. Though the tonnage of goods increased by 0.93 per cent., receipts fell by 7.39 per cent. This was due chiefly to the smaller tonnage of wheat carried and the shorter average haul. An increased tonnage of grain shipped to Bahia Blanca during the first half of 1935 considerably reduced the haulage on the Western system. Cattle traffic receipts improved by £41,215 or 6.45 per cent. Every endeavour has again been made to reduce operating costs, but savings effected were offset by additional labour charges thrown upon the company, and also by increased cost of petroleum and electric current, &c. Salaries and wages record an increase of £36,325, due to the fact that the payroll has been debited with the amount retained in terms of the Presidential award since October 1, 1934, which, in accordance with Article 2 of the award, may fall to be refunded to the staff. At the same time the award provided for the modification of the working regulations in order to obtain a better yield of work from the staff within the legal maximum working hours and the elimination of over-specialisation. All companies are working together to ensure that all modifications will be similarly applied as from November 1. Further measures for the closer co-ordination of working between the Great Southern and the Western Railways have been implanted during the year and have received the official sanction of the authorities. Some comparative operating figures follow:—

	1934-35	1933-34
Passenger journeys .. .. .	20,797,255	20,892,108
Tons of goods .. .. .	2,067,184	2,048,078
Average haul, km. .. .. .	222	251
Train-kilometres .. .. .	8,724,942	8,771,686
Operating ratio, per cent. .. ..	83.94	78.58
Passenger receipts .. .. .	£ 770,033	£ 736,105
Goods receipts .. .. .	1,582,273	1,708,564
Gross receipts .. .. .	3,513,204	3,612,117
Working expenses .. .. .	2,948,921	2,838,247
Net receipts .. .. .	564,283	773,870

A general purpose type of ventilated van has been designed, and 80 of these units are now in course of erection. It is anticipated that 50 will be ready for service by the end of December and the remainder by the follow-

ing March. Following on the successful trial of a water-softening plant at Trenque Lauquen, a similar plant has already been installed at Pehuajo, and further plants at Pellegrini, Lonquimay, Colonia Alvear, and Union are near completion.

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## Buenos Ayres and Pacific Railway

**F**ROM the operating point of view the results of working the Buenos Ayres & Pacific Railway during the financial year ended June 30, 1935, were not unsatisfactory, as there was a general improvement in the main items of traffic with certain exceptions, such as fine cereals and fresh fruit. This brought about increased purchasing power with brisker demand by the public. Gross receipts improved by £395,991 or 6.78 per cent., and the increase in working expenses was only £28,893 or 0.62 per cent., so that net receipts were higher by £367,098 or 30.54 per cent. The heavy loss on exchange continued, however, to be the controlling factor, and after providing £803,061 net to cover this, the balance remaining was only £766,124. Adding £149,012 balance of interest, &c., gives a total of £915,136, which covers a year's interest on the first debenture stocks of the company and of the Argentine Great Western and the Villa Maria & Rufino Railway Companies with £703,196 to spare. Other debenture interest for the year remains unpaid, and allowing for this and interest on arrears unpaid, &c., there is a debit balance for the year of £830,667. However, owing to the receipt during the past few months of increased remittances from Argentina, a payment of three years' arrears was made on August 2 to the holders of second debenture stocks of the company and the Argentine Great Western Railway Company.

Although passenger numbers decreased by 479,093 or 3.79 per cent., passenger receipts improved by £57,275 or 7.79 per cent. Road competition continued to eat into the local traffic, but long-distance traffic improved slightly due in part to the influx of visitors to the Eucharistic Congress and to excursions generally which brought in an additional £10,000. Goods tonnage improved by 70,454 tons or 2.35 per cent., and goods receipts by £314,761 or 7.63 per cent. Towards this increase the valuable wine traffic contributed £291,653, due to the fiscal measures adopted by the Federal Government and legislature. Some operating figures are compared in the accompanying table:—

	1934-35	1933-34
Passengers .. .. .	12,163,202	12,642,295
Tons of goods (metric) .. .. .	3,069,842	2,999,388
Train-miles .. .. .	7,919,014	7,663,184
Net profit per train-mile .. .. .	3s. 11½d.	3s. 1½d.
Operating ratio, per cent. .. ..	74.85	79.43
Passenger receipts .. .. .	£ 792,197	£ 734,922
Goods receipts .. .. .	4,440,210	4,125,449
Gross receipts .. .. .	6,239,964	5,843,973
Working expenses .. .. .	4,670,779	4,641,886
Net receipts .. .. .	1,569,185	1,202,087

During the year under review the company obtained 35.40 per cent. more mileage from engines leaving shops after general repairs than during the previous year. Again, the use of motor trolleys for track repair has brought about the suppression of a large number of gangs, and the re-arrangement of work has avoided taking on a considerable force of labourers. There is little scope for retrenchment outside of the wages bill without affecting the standard of maintenance; and labour regulations, coupled with the attitude of the Government towards dismissal of staff, have made it difficult to adjust the numbers to practical requirements. The Government has granted the company an extension of time until December 31, 1936, to present the final plans for the terminal station at Retiro.



## Buenos Ayres Great Southern Railway

ALTHOUGH the net receipts of the Buenos Ayres Great Southern Railway for the financial year ended June 30, 1935, exceeded the figures for the previous year by 2,492,520 pesos (equivalent at par to £217,600), the loss on exchange (after crediting a difference in respect of the valuation of currency net floating assets, &c.) exceeds that of the previous period by £104,988 and amounts to £1,552,722. The balance on net revenue account is aided by a transfer of £70,000 from the Bahia Blanca & North Western Railway contingencies fund and by £187,179 brought forward from 1933-34, and although the halving of the dividend on the 6 per cent. preference stock represents a saving of £240,000, the amount to be carried forward is reduced to £28,547. It is pointed out by the directors that the drain of exchange upon net revenue is entirely beyond the control of the board and the management, and while the free market quotation for exchange has been firmer recently, stabilisation at any higher figure than that now ruling is not yet in sight. Gross receipts improved by £441,425, or 4.20 per cent., and expenses rose by £223,824, or 3.05 per cent., so that the operating ratio fell from 69.87 per cent. to 69.10 per cent. The length of line in operation remained at 5,085 miles.

Less suburban travel accounts for the decrease in total passenger journeys. Road competition, which at this time last year only affected Buenos Aires and La Plata and their immediate environs, has now extended almost to the limit of the local sections. The omnibus tariffs are in the majority of cases 25 per cent. lower than the second class railway fares, but much has been done by the introduction of special tariffs to meet certain cases. Long distance and inter-station passenger traffic recorded a satisfactory improvement. Excursion travel also benefited from the Eucharistic Congress in Buenos Aires in October and the visit of the President of Brazil in May, there was a satisfactory advance in summer season bookings to Mar del Plata, Miramar, and other holiday places as a result of the propaganda carried on by the company. Consequent upon the completion of the State Railway line to Bariloche, and the inauguration of a through train service from Plaza Constitucion on December 10, 1934, a satisfactory rise was noted in movement to the Nahuel Huapi lake district. In goods there was an advance of 752,152 tons, or 10.39 per cent., the principal increases being in oats, linseed, rye, "specials," and cement. Goods receipts were higher by £344,350, or 6.46 per cent. Some operating figures are compared as follow:—

	1934-35	1933-34
Number of passengers .. ..	52,888,638	53,067,224
Tons of goods .. ..	7,988,861	7,236,709
Ton-kilometres .. ..	1,978,632,094	1,776,816,530
Average haul, km. .. ..	248	246
Train-kilometres .. ..	21,893,561	21,001,961
Fares earned .. ..	2,654,202	2,649,637
Freight earned .. ..	5,672,185	5,327,835
Gross receipts .. ..	10,957,684	10,516,259
Working expenses .. ..	7,571,296	7,347,472
Net receipts .. ..	3,386,388	3,168,787

Close supervision of all items of working expenditure was maintained throughout the year. The total number of men employed fell from 26,503 to 26,059, but, as a result principally of suspension as from October 1, 1934, of the deductions from salaries and wages which were in force during the whole of the previous year, the wages bill advanced by £203,521 or 4.35 per cent. and was mainly responsible for the increase in expenses in all departments. In materials and general expenses there was an advance of £56,799 or 4.02 per cent., and fuel costs rose by £69,373 or 9.96 per cent. A start has been

made with the construction of 100 general purpose wagons required primarily for the increasing fruit traffic from the Rio Negro district. The basic design is standard with those under construction for the Western Railway. Local and main line services with the eight diesel units have been duly maintained throughout the year. Reference is made in the report by the Chairman of the Local Committee to the railway labour situation and the Transport Co-ordination Bill, both of which have already been fully discussed in THE RAILWAY GAZETTE.

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## South Indian Railway

AT the close of the financial year ended March 31, 1935, for which we have now received the report, the length of line worked by the South Indian Railway Company on behalf of the Government of India was 2,228 miles, of which 599 miles were broad gauge, 1,530 miles metre gauge, and 99 miles narrow gauge. This is the same as at the end of the previous financial year. No lines were under construction during the year under review, but the Railway Board has given its sanction to the construction of the Agastiyampalli-Point Calimere Railway and the preliminary work such as calling for tenders, &c., has been taken up. In addition, the company also works for other owners the following metre gauge lines:—Pondicheri Railway (Pondicheri Railway Company) 8 miles; Karaikkal Railway (French Government) 15 miles; Travancore Railway (partly owned by the Government of India and partly by the Travancore State) 148; Coimbatore District Board Railway 25 miles; and Tinnevely District Board Railway 38 miles. It also works on behalf of the Cochin State the Shoranur-Cochin Railway of 65 miles, which has now been converted from metre to broad gauge. Open line capital outlay during the year, including suspense, amounted to Rs. 31,61,726, of which engineering works absorbed Rs. 18,25,989. The main items of expenditure were on remodelling Cuddalore Old Town, Salem, and Shoranur junctions; relaying between Tambaram and Chingleput; acquisition from the Coimbatore District Board of Pollachi junction; replacing wooden sleepers with steel transverse sleepers on certain sections. Outlay on rolling stock amounted to Rs. 21,45,931, mainly on 277 wagons and 3 standard (2-8-2 type) light goods engines XD class.

Gross earnings for the year under review showed a net increase of Rs. 13,73,231, or 2.78 per cent., and in working expenses there was a net advance of Rs. 6,75,499, or 2.39 per cent., so that net earnings were higher by Rs. 6,97,732, or 3.32 per cent. The company's share of surplus profits remitted to London amounted to Rs. 2,05,217, realising £15,498, as compared with Rs. 1,46,353 and £10,995 for 1933-34. To stockholders, however, the total distribution for the year is 6½ per cent. (3 per cent. from surplus profits and 3½ per cent. from guaranteed interest), as against a total of 8 per cent. for each of the fifteen preceding years. The accompanying table compares some operating figures:—

	1934-35	1933-34
Passengers carried .. ..	51,568,950	51,725,348
Public goods traffic, tons .. ..	2,927,860	2,686,181
ton-miles .. ..	364,631,923	340,566,366
Average haul, miles .. ..	125	99
Operating ratio, per cent. .. ..	57.17	57.99
	Rs.	Rs.
Passenger receipts .. ..	2,19,38,597	2,21,22,840
Public goods receipts .. ..	2,32,11,838	2,18,50,134
Gross earnings .. ..	5,06,91,469	4,93,18,238
Expenses .. ..	2,89,81,462	2,83,05,963
Net receipts .. ..	2,17,10,007	2,10,12,275

In all classes of passengers except third there were increases in numbers, but in receipts the only class

showing an improvement was the intermediate. Third class passengers as usual contributed 99 per cent. of the total number carried and 94 per cent. of the total earnings from passengers. In parcels receipts (Rs. 16,66,004) there was a decrease of Rs. 34,165. In goods traffic the commodities giving the principal increases both in tonnage and receipts were rice, other grains and pulses, and raw cotton. Oilseed consignments and receipts were, however, less. During the year under review, Rs. 31,97,656 were expended on account of renewals and replacements of permanent way, works, and rolling stock, as against Rs. 29,21,685 in the previous year.

\* \* \* \*

### Railway Transport of U.S.A. Mails

WE are reminded by *The Mutual Magazine* (issued by Pennsylvania Railroad employees) that the opening on August 25, 1835, of the Baltimore & Ohio line to Washington marked not only the introduction of the railway to the U.S.A. Federal capital, but also the inauguration of U.S.A. mail carrying by rail. In an editorial article on "Travelling Post Offices" in our issue of September 7, 1934, we recorded that, following the opening on September 15, 1830, of the Liverpool & Manchester Railway, the question immediately arose as to whether the new means of rapid transport could be used advantageously for the conveyance of mails. Arrangements were quickly made, and the first rail-borne mail was carried between Liverpool and Manchester on November 11, 1830. On the other side of the Atlantic the use of railroads for the transport of mails was suggested also almost as soon as the first public lines were opened in the early 1830's. The proposal was given serious consideration by the U.S.A. Post Office Department, and in 1835 arrangements were made to construct a compartment in a baggage car as an experiment. Two keys were made, one for the postmaster at Washington, and the other for the postmaster at Baltimore, and the first pouch of mail sent by rail was carried from Washington to Baltimore on

August 25. The innovation was pronounced a success, and the service was extended to other cities.

The records of the Post Office Department at Washington show that, during the first year of the railway mail service, transport of mails by post coaches and stages amounted to 16,874,050 miles; in sulkies and on horseback, 7,817,975 miles; in steamboats, 906,959 miles; and in railway trains, 270,504 miles. By 1836 mail was being carried on at least 200 miles of railroad and the annual transport totalled nearly 300,000 train miles. On July 7, 1838, Congress passed an act making every railroad in the United States a post route, and from that time forward the growth of the service was rapid. It was not until the Civil War period in the early 1860's, however, that Post Office cars, equipped to sort and distribute mail *en route*, were introduced. In Great Britain a horse box had been fitted up temporarily as a sorting carriage and run between Birmingham and Liverpool, for the first time on January 6, 1838. The experiment was considered so successful that on June 19 of the same year it was decided to make the travelling Post Office a permanent institution. Accordingly, the first sorting carriage to be constructed specially for that purpose was built by the Grand Junction Railway Company. This vehicle had the further distinction of being equipped with apparatus for exchanging mail bags at speed.

In 1885, mails were being carried upon 121,032 of the 128,320 miles of railroad in the United States, and between four and five thousand men were being employed in railway mail service. By this time railroads had largely supplanted stage coaches and other forms of transport in the carriage of mails. Aided by the extensive growth of U.S.A. railroad system within the past half century, the American postal system has since grown enormously. In the year ended June 30, 1933, the latest period for which figures are available, the railroads carried United States mails an aggregate distance of 455,677,000 miles over 205,892 miles of line. Thousands of railway cars and more than 20,000 railway mail clerks were employed.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Twenty-Five Years of Railway Signalling

London Midland & Scottish Railway Company,  
Signal and Telegraph Engineer's Office,  
Euston House, Seymour Street, N.W.1.

October 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to the very interesting retrospect of signalling progress during the last 25 years contained in your issue dated October 11, in the interest of historical accuracy may I be allowed to point out an error, namely the inclusion of the Guide Bridge widening (1906-07) under the heading of "Automatic Signalling."

This installation involved 14 signal-boxes commencing at Ardwick at one end and Newton at the other, all points and signals being power operated on the low pressure pneumatic system, and in no case did any signal operate automatically for the purpose of providing an additional block section. There were two somewhat unusual features which applied to this installation, namely:—

(1) The levers (slides) of running signals were automatically returned to the normal position through the medium of track circuit by the passage of a train; and

(2) Levers were not provided for distant signals, such signals being reversed automatically by the lowering of the relative stop signals ahead.

I submit that these two features are no justification for including this installation as an example of automatic signalling, and that it should be classified as an ordinary power plant.

Yours faithfully,

A. F. BOUND

[We ourselves debated the correct allocation of the Guide Bridge widening. In "Power Railway Signalling" (H. Raynar Wilson, *The Railway Engineer*) from which we had occasion to refresh our memory as to dates and other details—it was said, at page 154, that no purely automatic signals were used; adding "all the running signals are semi-automatic, i.e., they are restored independently of the signalman." On the other hand, the "Cambridge Resignalling" pamphlet of the Power Railway Signal Company—the successors, in all but name, to the British Pneumatic Railway Signal Company, who did the Guide Bridge work—claimed the provision of 75 "automatic signals" on that widening. What decided us to include this work under the heading of Automatic Signalling was that we wished to give credit to the Great Central Railway, to Sir Sam Fay, and to Mr. Bound himself for their share in the "only four installations of automatic signalling in this country in 1910." They had been given credit in a preceding paragraph for having installed a power plant.—Ed. R.G.]

## PUBLICATIONS RECEIVED

**Railway Accidents During January-March, 1935.** H.M. Stationery Office. Price 5s.—This publication is of unusual interest in that it includes the reports on the three derailments of passenger trains on the L.M.S. Railway—at Hazelwood, Ashton-under-Hill, and Moira—and the triple collision at King's Langley. These were summarised in our issues of July 12, August 2 and August 16, respectively, but those sufficiently interested may now have the reports in full.

**Practical Hints on Patents** (Fifth Edition). By M. E. J. Gheury de Bray. Issued by the Imperial Patent Service, High Holborn, London, W.C.1. 7½ in. × 3½ in. 46 pp. and index. Price 6d.—This little book, which has been revised and enlarged, is written by an experienced patent agent as a help to inventors, and gives them good advice, based upon his 16 years experience; it also shows how they can keep down expenses to a minimum. Such important points as the ownership of the patent of an employee or his employer, infringements of patents and the patent code generally are dealt with. Chapters are also devoted to provisional protection, specifications and designs, trademarks and copyrights, and the booklet terminates with a summary of the objects and work of the patent service and a scale of charges. Altogether it should be a valuable guide to anyone wishing to patent anything he has invented.

**Railway Nationalisation in Canada.** By Leslie T. Fournier, M.A., Ph.D. London: Macmillan & Co. Ltd., St. Martin's Street, W.C.2. 9½ in. × 6 in. × 1 in. 358 pp. Price 15s. net.—The objects of this study are fourfold, namely, to interpret the forces which resulted in the ownership by the Canadian Government of an important network of railways; to analyse the financial and operating results of this railway system; to discuss problems which have resulted from this Government enterprise; and to put forward a policy for the future. Dr Fournier, who is Assistant Professor of Economics at Princeton University, New Jersey, has prepared a valuable and generally dispassionate work for which all students of what is termed the "Dominion's major financial problem" should be grateful. He traces the history of the Grand Trunk, Canadian Northern, and Intercolonial Railways, and says that, with the rapid expansion of population and trade in the 1903-1912 period, the resultant unparalleled activity in Canadian railway development made Government aid essential. This is attributable largely to the great distances to be overcome and the necessity of building ahead of settlement.

The analysis of comparative Canadian Pacific and Canadian National costs draws attention to disparities which are called "greater than can be

fairly explained by different operating characteristics," but in this connection it is not argued that the executives of the C.N.R. are less competent than C.P.R. officers. Rather the author's contention is that, despite any "non-political" operating organisation, it is not possible to divorce the administration of the Canadian National from political influence or pressure, because voters will invariably exercise their displeasure against the Government if it fails to interfere with railway policies which happen to meet their disfavour; voters "are much more conscious of the railway service which is available to them than they are of the effects of railway deficits on their taxes."

Dr. Fournier comes to the conclusion that co-operative economies provide no solution. He points out that from November, 1932, to the summer of 1934 such measures produced savings to both railways of only \$1,250,000, whereas "even the Canadian National, which has consistently opposed unification, estimated the savings therefrom at \$56,400,000." It is, perhaps, in this section of his book that the author's work is most controversial. Many of the data he has so clearly assembled in earlier chapters are of equal value to all concerned with the problem of the future of railway development in Canada, but his use of them is avowedly partisan. In 1917 Lord Shaughnessy, then President of the C.P.R., proposed that his company should be allowed to operate the Canadian Northern, the Grand Trunk Pacific, and the National Transcontinental, and he renewed this suggestion in 1921. Now that the Government lines are all merged into the Canadian National Railways system, the C.P.R. still advocates unification of the two great organisations under private administration, and this solution, in Dr. Fournier's opinion, is the only logical and practicable one, offering "a means whereby annual economies of fifty million dollars or more are possible."

**Travel Guide to Kenya and Uganda.**—Almost every page and picture in this publication of the Kenya and Uganda Railways and Harbours implies a tribute to the rapidity and thoroughness with which the pioneer transport service has developed the country. "Kenya was not even a name, and Uganda little more, when this century began," says the foreword; yet the first chapter, which gives a history of the railway system and an outline of its present facilities, lists eighteen circular tours over main routes 1,021 miles in length, and important branches accounting for a further 587 miles. The interior and exterior views of rolling-stock require little elaboration in the letterpress to bespeak a high standard of comfort. As the book is intended for prospective settlers as well as tourists

a table of ordinary passenger fares between the principal stations is included. The gradients of the main line from Mombasa to Kampala are shown in profile, and in a chapter on big game Captain A. T. Ritchie finds a lively synonym for the line to Nairobi by comparing it to the model railways that flourish in the shops at Christmas, where a tiny engine negotiates an endless series of chasms and mountain ranges, while all around are ranged the traditional denizens of Noah's Ark. Every year a dozen or more giraffes are killed on this section of the railway. Travel information by no means monopolises the handbook, which is full of information on the topographical and sporting characteristics of the country. The Kenya and Uganda Railways system is shown on a coloured folding map at the end, whereon are also indicated roads, game preserves, lakes, and mountains.

**Winter Sports.**—The principal winter sports resorts in Europe are set out with brief descriptive notes in this illustrated handbook from Dean and Dawson Limited, 7, Blandford Square, London, N.W.1. Travel arrangements to the various countries concerned are given due prominence, and visitors to Switzerland, Austria, and Germany have the advantage of all-in rates by trains with reserved accommodation for departures on December 21 and 28, and January 4, 1936. As an example of the economical holidays made possible by these and similar arrangements may be quoted a nine-day tour to Engelberg or Grindelwald for £9 5s.

**Tours in South Africa.**—A 53-day tour from London to South Africa and back at £1 a day is one of the numerous attractive arrangements announced in this illustrated booklet published by Dean & Dawson Limited, 7, Blandford Square, N.W.1. The itinerary includes 1,000 miles of road travel, visiting many important centres. The selection of other tours from Cape Town is very varied both as to itinerary and duration, while among the excursions from Durban there is advertised a round trip by air visiting Johannesburg, Pretoria, Bulawayo, Livingstone, Victoria Falls, and Fort Victoria. The fare is £97 6s. for one person, or £75 13s. 6d. each for four persons.

**A Non-Ferrous Alloy.**—Tungum Alloy, marketed by the Tungum Sales Co. Ltd., Idlesleigh House, 32, Caxton Street, S.W.1, is a non-ferrous metal made entirely of Empire ingredients and possessing the qualities of light weight, great durability, and resistance to chemical attack. A booklet has now been published showing the results of tests to which the metal has been subjected, all of which bear high testimony to its physical, chemical, and mechanical properties. Tungum has nearly a decade of severe practical use behind it, and among the diverse applications in which it has established its reputation are condenser tubes, firebox stays, shafting, valves, and cocks.



## THE SCRAP HEAP

### OUR CYNICAL MUSICIANS

As the train drew in, the combined Salvation Army bands struck up "Praise Gold from Whom All Blessings Flow"—New Zealand Paper.—From "Punch."

### ON THE PERMANENT WAY

"You're a signal failure," said the churchman to his prodigal son. "You ought to have occupied a good station in life, considering the way I've endeavoured to train you. Instead, you are driving to perdition along the lines you are going. Once again let me warn you of the dangers at all points. Let me express—"

"Yes, yes, dad," interrupted the impatient and impenitent one, "please stop it. Pull the ex-communication cord!"—From "The Weekly Telegraph"

### A HUNDRED MILES AN HOUR

I feel we underrate the intelligence of the nineteenth century. The normal reaction to any great feat of mechanical science is for everyone to rub his hands—metaphorically perhaps—and say, "Aha, whatever would they have said about that a hundred years ago?" And it is the same with the new Silver Jubilee train. Everyone rubs his hands and says, "Aha, whatever would George Stephenson have said about that?" And this is what he actually did say—before a Select Committee on Railways in 1841:—

"It is true that I have said the locomotive engine might be able to travel at 100 miles an hour, but I always put a qualification to this, namely, as to what speed would best suit the public. Long before railway travelling became general, I said to

my friends that there was no limit to the speed of the locomotive provided the works could be made to stand. But there are limits to the strength of iron, whether it be manufactured into rails or locomotives, and there is a point at which both rails and tyres must break. Every increase of speed, by increasing the strain upon the road and the rolling stock, brings us nearer to that point."

So, given present-day materials, I doubt if George Stephenson, for one, would have been very surprised over the new train's performance.—From the "Yorkshire Post."

Coincident with the news of yet another bank robbery comes a story that the Scuderia Subrosa have become the anything but proud owners of three racing cars. The machines are 1½-litre Pott Specials. These cars were built by Messrs. Knight & Day, the well-known firm of motor engineers, to the specification of a Mr. Pott, a haulage contractor who goes about taking loads off people's minds.

An interesting feature of these cars is that when the speedometer registers 30 m.p.h. (6,000 r.p.m.) a bell rings and the current copy of *The Railway Magazine* is shot into the lap of the passenger, if any.

At the moment the cars are fitted with two-seater bodies. This was because they were inclined to boil, the second seat being for a special observer, as, after exhaustive research, it was found that a watched Pott never boils.

At the moment the cars are painted blue, but Count Kettle is having them repainted yellow (the Scuderia's racing colours in more senses than one). They will then be renamed Kettle Specials. This amazing feat of engineering on the

part of the Count may well revolutionise motor racing.

The opinions of the Scuderia's drivers as to the merits of the cars are rather divergent. Hans Upp, the German crack, took one look at his machine and was led away blaspheming horribly.

The other two drivers' remarks were short, but to the point:—Count Nittwitz (that dud Czech): "A mess of Pottage." Mr. Flickerbotham (pronounced Flim): "Pretty hot, Pott."

This difference of opinion is accounted for by the fact that it was in one of Mr. Flickerbotham's (pronounced Flim's) companies that Nittwitz lost his entire fortune. Mr. Flickerbotham is at a loss to explain this, as he cannot remember which company it was. He is, however, writing to the Official Deceiver for further details.

Naturally this has caused considerable unpleasantness in the Subrosa stable. Count Kettle is deep in negotiations with the various oil companies for some free oil to pour upon these troubled waters.—From the "Sports Car."

### SLIP CARRIAGES

It is as well to be cautious in getting into last carriages, lest they should be slips. At St. Pancras on a Nottingham race-day, when the Luton slip was full, a corpulent racing-man, notwithstanding protests, forced his way in at the last moment, and stood making remarks intended to be irritable until the carriage stopped at Luton and the other passengers left him alone. "All change here!" said the guard; and when the bookmaker stepped out on to the platform and found the carriage alone in its glory, and the train disappearing in the distance, his look of surprise and disgust—and his language—amply repaid us for our unpleasant journey.—W. J. Gordon, in "Our Home Railways."



Reproduction of a fine painting by E. L. Henry of train headed by the locomotive "De Witt Clinton" running between Albany and Schenectady in 1831

The Mohawk and Hudson Railroad Company, the oldest unit of the New York Central, was incorporated on April 17, 1826. Ground was broken on August 12, 1830, and the line, between Albany and Schenectady, completed a year later. The "De Witt Clinton" was made by the West Point Foundry Works, New York, and hauled the inaugural excursion train on August 9, 1831. Public traffic began the next day, but both steam and horse traction were used for some weeks

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

### SOUTH AFRICA

#### Record Railway Revenue

Two new records were established in respect of the revenue for the week ended September 28. The total for that week was £595,621, the previous highest figure being £593,590 in the last week in June of this year. The goods total is also a record, having reached £401,848, this being the first occasion on which the £400,000 mark has been reached.

#### Level Crossing Policy

The Minister of Railways and Harbours has intimated that the administration's policy in regard to level crossings is the elimination of all dangerous crossings in the Union. The scheme to bring this about falls under three heads: (1) Where the level crossing is within the limits of any big municipality or other local authority able to afford 50 per cent. of the cost, the present policy of building subways or overhead bridges is to be pressed to the limit. (2) Where the local authority is unable to afford half the cost, the administration is prepared to pay up to 80 per cent.: the balance of 20 per cent. or more can be repaid by the local authority over a period of 20 years at 3½ per cent.; redemption and interest on the 20 per cent. will cost the local authority seven per cent. of the 20 per cent. over 20 years. (3) In all other instances and where no local authority exists, the administration will either insure the safety of the crossings by means of booms or gates or eliminate the crossings and construct subways or bridges.

#### Publicity

The annual report of the Manager of the Publicity and Travel Department states that the general prosperity manifest during the past year gave a new impetus to travel within the Union and beyond its borders, and the period under review derived a further notable measure of significance by reason of the fact that this country was chosen as the venue for several conferences of world-wide importance. The total number of visitors from overseas, 10,363, represents an increase of 2,262 compared with the previous year. Advices from abroad indicate that the near future will witness an unprecedented advance in the travel field.

The railway administration increased its financial support of the national publicity movement to £25,000, which contribution, supplemented by subscriptions from public bodies amounting to £4,694 and a grant of £3,000

by the Department of Mines and Industries, rendered possible a further important advance in activities overseas.

As in previous years a feature of the advertising was the reciprocal arrangement with other countries in the display of posters on railway hoardings. The countries participating in this measure are Great Britain, India, Canada, Kenya and Uganda, Australia, New Zealand, Austria, Sweden, Switzerland, Germany, Denmark, Holland, and Norway. The department continued its efforts to attract tourists from India and the Far East and close co-operation was established with a number of additional tourist agencies there. In America the tourist work was carried out by several well-known travel agencies and allied organisations, and in the sphere of general publicity the department worked in close collaboration with the Minister Plenipotentiary and his staff at Washington.

### NEW ZEALAND

#### Safety Development Policy

In the financial year ended March 31 last, the Government Railways spent £644,396 on permanent way, and £926,797 on rolling stock. These facts were adduced recently in support of a departmental statement that the condition of the permanent way and the rolling stock was never better than at the present time. The annual mileage run by goods trains amounts to 5,972,692, and by passenger trains 4,653,708, or a total of 10,626,400 miles for both goods and passenger services. The New Zealand railways have now completed 10 years in which 230 million passenger journeys have been made without a single fatality caused to railway passengers. This safety record would challenge comparison with that of any country in the world.

#### A Bid for Traffic

The question whether bus or railway should serve the northern suburbs on the line affected by the Tawa Flat deviation out of Wellington has led to strong representations by the Railway Department. The General Manager, Mr. G. H. Mackley, stated that all suburban railway traffic involved losses in operating expenses, yet the Railways Board was prepared to face this in order to give service to the public. In return it naturally expected that the public would support that service, in order that the losses should be kept down to the lowest possible point. The electric service which it was proposed to offer the people of the

northern suburbs would be faster and cheaper than either bus or tram services. People would be brought right in to the new central railway station, where numerous facilities would be available for their comfort and convenience.

The new scheme would involve a considerable outlay in capital expenditure. The board necessarily had to look at the proposition from the point of view of the amount of traffic the service would attract. Having regard to the benefits to be conferred on the districts served, and the stimulus to progress and development provided, it was entitled to claim the whole of the traffic. On no other basis would it be possible for the board to face the expenditure involved in providing a service of the kind proposed.

#### Rolling-Stock Improvements

General improvements in rolling-stock, signalling, bridge-girder fabrication and road motorcar work are among the activities which are keeping three shifts fully occupied daily in the Hutt Valley (Wellington) railway workshops. A staff of 1,500 is now employed at these shops, which cover 60 acres of ground, including 8½ acres of buildings, and use 6,000 h.p. of electric current daily; every department is intensely active. It is claimed that when these shops were planned in 1929, no better layout could be procured, and that the equipment is so comprehensive that there is scarcely any railway fitting or part which cannot be made there as well as overseas. Advantage is being taken of this to replace car fittings with their modern counterparts, so as to keep the railways as up to date as possible. The bulk of the work, however, is on locomotives. These generally average about 85,000 miles between overhauls, but when these are necessary it takes only 24 days to effect the overhauling. This speed of working could be maintained only with a carefully-scheduled chain of operations, every activity in connection with which is grouped, and so placed as to fit into the chain.

### INDIA

#### The Viceroy on Railway Finance

In addressing the Legislative Assembly recently, the Viceroy referred to the financial position of the Indian railways. He was greatly disappointed that the improvement in railway earnings, which was so welcome a feature of the previous year, had suffered a setback during the current year. Till the middle of August, railway earnings were about half a crore below those of the previous year, and unless there was a change for the better, the position of the Indian railways would again become serious. His Excellency added that his Government was fully alive to the gravity of the situation, and was in consultation with those responsible for the administration of Indian railways in order that all

possible steps might be taken to improve their net earnings.

### Kathiawar Railways Conference

The fifth session of the Kathiawar Railways Audit and Traffic Conference has recently been concluded at Porbandar, with Mr. D. B. Bhatt, Traffic Superintendent, Bhavnagar State Railway, in the chair. An important item in the agenda was the consideration of methods for the development of traffic. Proposals discussed in this connection included the running of cheap excursions, the organisation of talkies as an aid to the creation of traffic, and the provision of extended facilities for goods and passenger traffic. Problems relating to hire and penalty charges for interchange stock, the detention of rolling stock consequent upon the imposition of customs cordons at Viramgam and Dhandhuka, and the revision of the general classification of goods were discussed and satisfactory conclusions were reached.

## UNITED STATES

### Freight Traffic Continue to Improve

The American railways continue to be greatly encouraged by the trend of freight car loadings. For each of the weeks ended September 14 and 21 these loadings totalled over 700,000, a figure not attained since the autumn of 1931, and then much later in the season than at present. Normally, car loadings should continue to increase through October and the first two or three weeks in November, and if this occurs—and the predominant opinion appears to believe it will—the railway outlook will shortly become a great deal brighter than it has been for several years.

### Further Details of the Van Sweringen Deal

The controlling shares in the Alleghany Corporation, the holding company that dominates the railway "empire" of the Van Sweringen brothers, were sold at auction by the bankers on September 30 at New York, and the buyers were associates of the Van Sweringens.\* So the "empire"—comprising the Chesapeake & Ohio, the Erie, the Nickel Plate, the Pere Marquette, the Chicago & Eastern Illinois, the Missouri Pacific and the Denver & Rio Grande Western Systems—remains intact and, at least nominally, in the same hands. The shares sold at auction were the collateral security for the sums totalling £9,600,000 lent by J. P. Morgan & Co. and other bankers, but they realised only £940,000, representing a considerable loss to the bankers. This, however, they were, apparently, willing to assume rather than continue in-

volved, virtually as partners, in a rickety financial structure so complex that few have the time or patience to master its details. Associated with the Van Sweringens in bidding for re-control of the Alleghany Corporation were several Middle Western industrialists and bankers, so that the financial needs of these railway properties will henceforth be cared for by bankers probably new to railway financing.

## BELGIUM

### Extensive Realigning and New Works

Accelerated schedules on several Belgian main lines will be introduced in May, 1936, as a result of the extensive realigning and relaying works now being carried out. On the Luxembourg line the present maximum speed of 100 km.p.h. (62 m.p.h.) will be raised to 120 km.p.h. (75 m.p.h.) over certain sections, and the present service slack to 40 km.p.h. (25 m.p.h.) at Gembloux will be removed and trains allowed to run through that station at 120 km.p.h. The existing 120 km.p.h. limit is likely soon to be raised to 130 on the Brussels-Liège line, and to 140 on the Brussels (Midi)—Ghent direct line. On the Ostend line the present speed restrictions to 50 km.p.h. (31 m.p.h.) at Zeehuis—where the lines to Ostend-Quai and Ostend-Ville fork—will be abolished, and it is possible that the latter station will be closed, as it is little more than a quarter-of-a-mile away from the former. Work begun before the war on the line bypassing the curved station at Bruges has been resumed, and it is possible that this cut-off and a new station named Bruges-Porte Maréchal will be opened before the end of 1936.

## FRANCE

### Passenger Concessions

Special advantages are offered under the new passenger tariffs, which came into force on October 1 on French railways. Passengers may now break their journeys at any number of stations provided they carry a permit, which may be obtained on payment of fr. 2. Some special tickets allow of a break of journey without any fee or formality. The new regulations provide greater facilities for the issue of circular tour tickets. They are issued as ordinary return tickets, with the fare calculated as that of a ticket to the farthest point of the circuit. Such circular tickets permit break of journey without payment of a fee for the permit.

Tickets for health resorts, issued at the usual reduction of 25 per cent. first class and 20 per cent. second and third, are now made available for 40 days, instead of 33, and they may be extended for two periods of 20 days each. Facilities for cheap week-end tickets, recently introduced by the railways, are now given on a more comprehensive

scale. Week-end return tickets issued to certain specified stations are available at a reduction of 50 per cent. for a minimum return journey of 200 km. Such tickets will also be available for winter sports resorts. Other special week-end tickets may involve reductions up to 50 per cent., especially those for health and winter sports resorts situated less than 100 km. from the departure point.

Season tickets now include special half-fare tickets, which may be used by a passenger over a selected route of his own choice. These are useful when a traveller has to make a number of journeys, but not enough to justify the purchase of an ordinary season ticket. Thus, an annual half-fare ticket between Paris and Fontainebleau may be obtained on payment of fr. 100 third class. This payment will cover eight return journeys and after that the passenger pays only half-fare for any number of journeys.

### Half-fare Tourist Party Tickets

Half-fare tickets are also available for tourist parties. These are issued to groups of at least ten passengers. The only condition is that the passengers must travel together on both the outward and return journey, but the itinerary may be broken by stops at selected points. Such collective tickets are available for 20 days to parties formed in France and for 40 days to parties coming from abroad. They are thus of great interest to tourist agencies. Any foreign tourist agency can now offer a reduction of 50 per cent. in fares for travel in France, provided the party comprises ten or more passengers. This advantage is expected to give a stimulus to conducted tours. These and other facilities for travel in France under the new passenger tariffs are explained in a booklet entitled "Guide Pratique du Voyageur" just published by the railways.

### Motorcars Carried as Luggage

Advantages are also offered under these tariffs to motorcar owners who wish to take their cars with them by train to distant holiday resorts, or to remote parts of the country where they can use them for tours. The car is treated as luggage and like ordinary luggage may be carried free of charge, provided the total passenger fares of the party amount to at least one franc a kilometre with a minimum payment of fr. 1,000, corresponding to a total journey of 1,000 km. The number of passenger tickets taken into account to make up this amount is limited to six. But if the total fares fall below the minimum of one franc a kilometre, the passengers may pay a supplement to complete the amount. Thus, two persons travelling first class with chauffeur third class pay a total of fr. 1.10 a km. and the car goes free. If there is no chauffeur, the supplement for the car in this case will be ten cm. a km. or fr. 50 for 500 km.

\* This was briefly recorded in an editorial note on page 517 of our issue of October 4.—[Ed. R.G.]



## THE REPAIR OF LOCOMOTIVE CONNECTING RODS—I

*Details of the progressive system in use at the Horwich works of the L.M.S.R.*

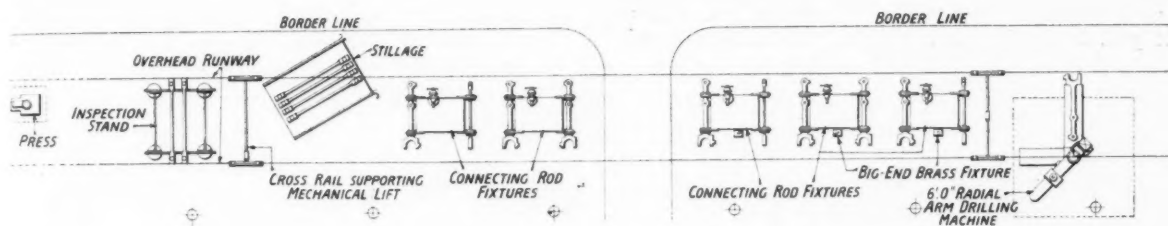


Fig. 1—Layout of plant for repairing locomotive connecting rods

IN the issues of THE RAILWAY GAZETTE for January 18 and 25, and March 22 and 29 of this year, there appeared illustrated articles dealing with the progressive repair of locomotive and wagon axleboxes as practised at the Horwich works of the London Midland & Scottish railway. Now by the courtesy of Mr. W. A. Stanier, Chief Mechanical Engineer of the company, we are able to supplement these articles with the present one, which deals in similar fashion with the progressive repair of locomotive connecting rods. The layout of the plant adapted to this purpose is illustrated in the general plan (Fig. 1) reproduced above. It is so arranged that the method involved in the various re-conditioning stages are not only progressive, thereby forming a "belt" or "line" system of repair, but they also make it possible to dispense with traditional practices and adopt more efficient and economical methods.

Under this system the rods are conveyed by mechanical trucks (Fig. 2) from the stripping pit to a permanent stillage fixed in a convenient position at the start of the connecting rod section, and the rods are moved on from this to an inspection stand by the mechanical lever lifting arrangement, a description of which was given in a previous article. In conjunction with this lift a special self-locking grab, Fig. 3, has been designed to grip connecting rods of varying width and thickness. It will be apparent from the line drawing that this method is more efficient and instantaneous than the use of a chain or rope sling. The grab consists of four grab hooks, A, which are pivoted at B and C. The pivoting movement of these hooks is actuated by the bell crank levers D having elongated slots at the lifting end to which the lifting hook E is coupled by the pin F. The other end of the bell crank

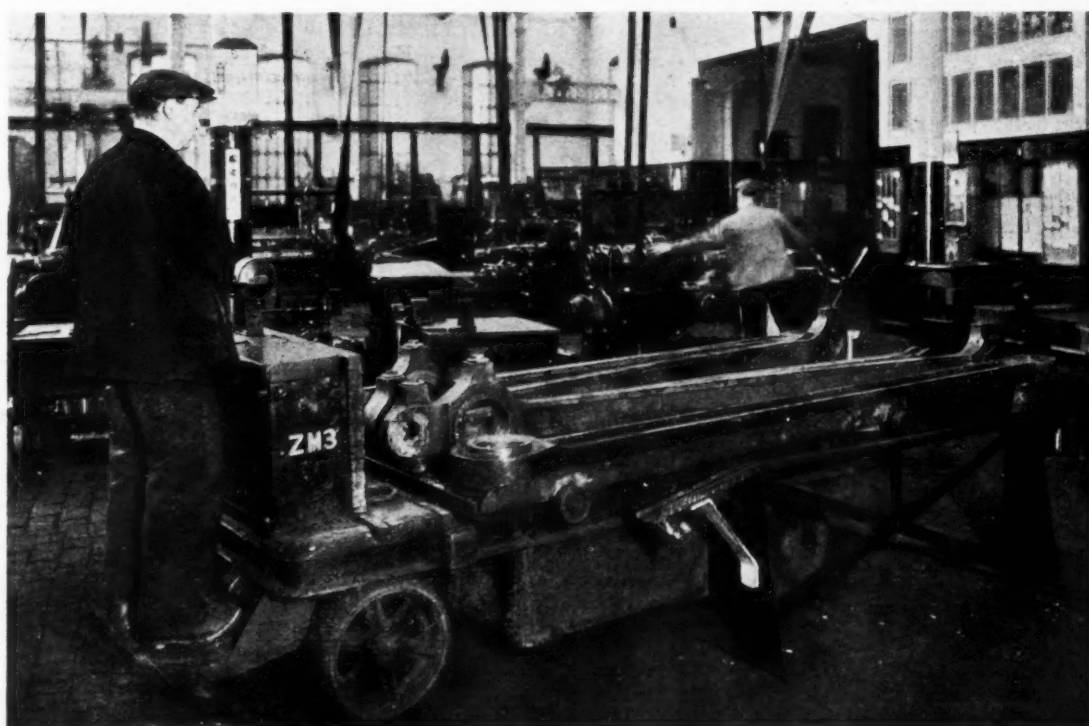


Fig. 2—Mechanical truck conveying rods to permanent stillage

is slotted to receive pins G which are attached to the cams H. These cams are pivoted at I and held in tension by the springs. This self-locking grab is quickly placed in the correct balancing position on the rod by slight hand pressure on handles K and immediately pressure is exerted on the long lever of the mechanical lift, the grab automatically locks and the rod is securely held and locked by the hooks A and cams H. The method of releasing the grab is also instantaneous, as immediately the rod is

is marked with the particular colour indicating the nature of the repair, or scrap, as the case may be. After the examination for flaws has been carried out the inspector then examines all details for wear. In connection with the wear examination he uses a series of progressive gauges which indicate the limit of the allowable wear on both the big end bolts and bolt holes, and also the width of the housing for the big end brass. The progression of these gauges is arranged in steps of 0.015 in. from 2 in.

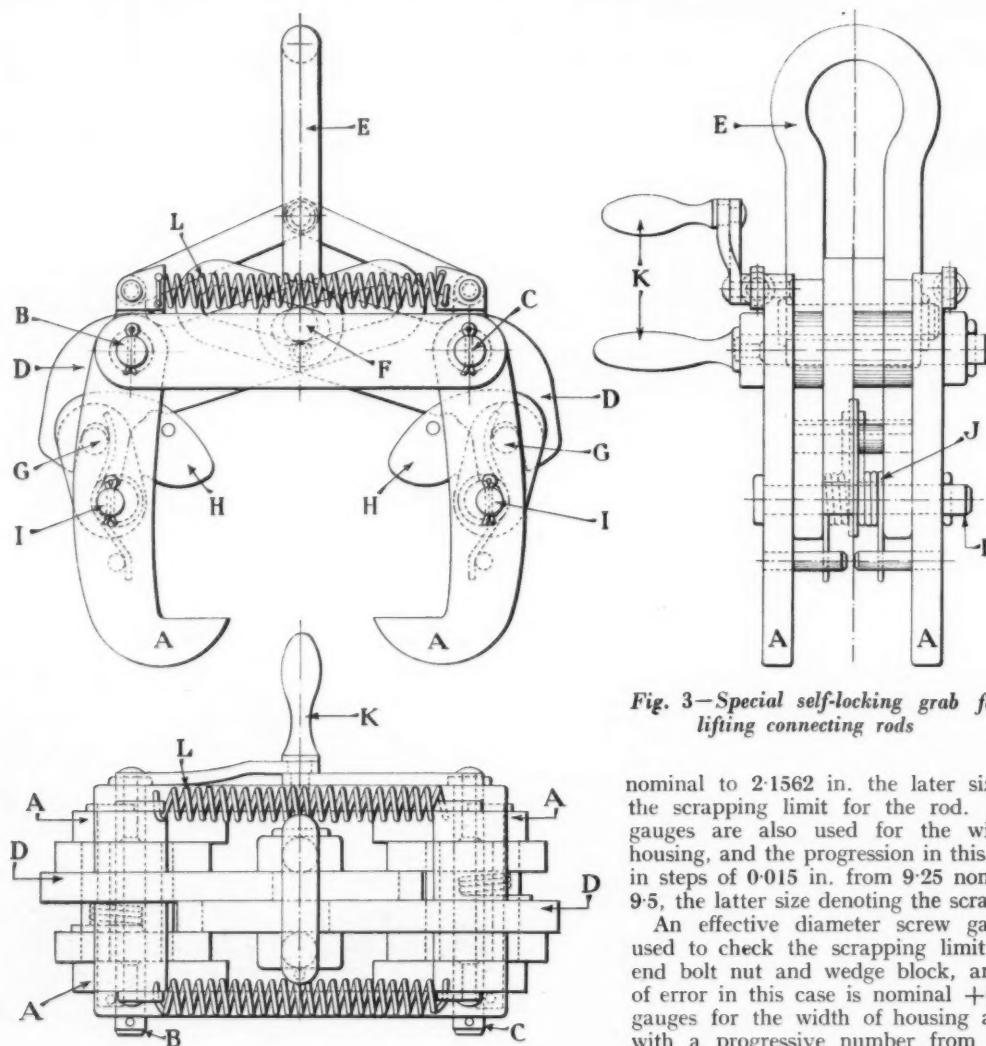


Fig. 3—Special self-locking grab for lifting connecting rods

lowered in position the top tension springs L and cam tension springs J automatically release the grab, thereby enabling it to be quickly removed from the rod.

#### Initial Examination and Inspection

The initial examination and inspection of the rods is carried out on the section and at pre-determined periods each day, these being arranged to synchronise with the loading periods on the stillage; an inspector carries out the initial examinations for flaws and wear. The inspection stand, adjacent to which is a limit gauge rack, is situated in a convenient position in line with the stillage in order that the rods can be conveniently handled by the runway and lifting arrangement. The standard colour scheme is incorporated in the examination and each detail

nominal to 2.1562 in. the latter size denoting the scrapping limit for the rod. Progressive gauges are also used for the width of the housing, and the progression in this case is also in steps of 0.015 in. from 9.25 nominal size to 9.5, the latter size denoting the scrapping limit.

An effective diameter screw gauge is also used to check the scrapping limit of the big end bolt nut and wedge block, and the limit of error in this case is nominal  $\pm 0.015$ . All gauges for the width of housing are stamped with a progressive number from 1 to 17 in steps of 0.015 in.; No. 17 is the limit of wear and beyond this size the rods are scrapped. After the examination and inspection has been carried out the inspector fills in a series of three inspection sheets, and these constitute in effect the necessary authority for repair or renewal. Each sheet is marked with the particular type of rod, class of engine and engine number. Fig. 4 shows the materials inspection record and all the component parts of the rod under examination are enumerated on the sheet in detail. If the examination has revealed parts which are to be scrapped, these are marked on the sheet and new material is accordingly ordered to replace that rejected. Fig. 5 is the repair sheet, on which all fitting operations connected with the rod and its component parts are enumerated and a serial number given to correspond with each operation; the

L.M.S.R. Chief Mechanical Engineer's Department.

FITTING Shop HORWICH

Clock No. 2502 Name S. Walldin Week Ending 18 May 1935

CONNECTING ROD "A" TYPE (STANDARD MARINE WITH L.E. STRAP)

Class S.L.D. Goods, Radial Tanks, 4-4-2 Atlantic.

Engine No. 12388 /5.

Cat. No.	Gauge No.	Description and Operation	P.W. Price No.	Quantity		P.W. Price Total	
				New	Repd.	New	Repd.
				L.H.R.H.	L.H.R.H.	£	s. d.
		CONNECTING ROD.					
		Dismanlye	5500/1	/	/		
		Examining	5500/2	/	/		
		Squaring rod end at little end	5500/5	/	/		
		-do-	5500/6	/	/		
		Fitting A Pin Bush	5500/7	/	/		
		Trimming one side of bush.	5500/8	/	/		
		Remove set screws & clean oil wells.	5500/9	/	/		
		Replace	5500/10	/	/		
		LITTLE END STRAPS					
		Closing	5500/12	/	/		
		Fitting Rod and	5500/13	/	/		
		Fit E. brasses	5500/4	/	/		
		Fit Little end wedge block	5500/15	/	/		
		and screw.	5500/16	/	/		
		Relace	5500/17	/	/		
		Big END L.E. bolts.					
		Fit liner on brass.	5500/19	/	/		
		Fit brasses	5500/20	/	/		
		Fit strap, bolts & nuts	5500/21	/	/		
		SYNCH CAPS.	5500/22	/	/		
		Trammed for marking bore of	5500/23	/	/		
		B.L.L.S. brasses & A Pin bush					
		STRAP BIG END BRASSES FOR REP- ING.	5500/24	/	/		

Fig. 5—Repair sheet

L.M.S.R. Chief Mechanical Engineer's Department

MACHINE Shop HORWICH

Clock No. 2502 Name S. Walldin Week Ending 18 May 1935

CONNECTING ROD "A" TYPE (STANDARD MARINE, WITH L.E. STRAP.)

Class Standard Goods, Radial Tanks & 4-4-2 Atlantic.

Engine No. 12388 /5.

Cat. No.	Gauge No.	Description and Operation	P.W. Price No.	Quantity		P.W. Price Total	
				New	Repd.	New	Repd.
				L.H.R.H.	L.H.R.H.	£	s. d.
		CONNECTING ROD.					
		Reamering Big End Bolt Holes	5500/3	/	/		
		Milling Big End Jaw.	5500/4	/	/		
		Reamering Little End Bolt Holes	5500/11	/	/		
		Metalling faces of Big End					
		Brasses for Outside Rods.	5500/18	/	/		
		Boring Little end	5500/25	/	/		
		Boring "A" Pin Hole.	5500/26	/	/		
		Boring Big End Brasses.	5500/27	/	/		

Fig. 6—Sheet for machining operations

L.M.S.R. Chief Mechanical Engineer's Department.

FITTING Shop HORWICH

Clock No. 2502 Name S. Walldin Week Ending 18 May 1935

CONNECTING ROD "A" TYPE (STANDARD MARINE WITH L.E. STRAP)

Class Std. Goods, Radial Tanks, 4-4-2 Atlantic

Engine No. 12388 /5.

Cat. No.	Gauge No.	Description and Operation	P.W. Price No.	Quantity		P.W. Price Total	
				New	Repd.	New	Repd.
				L.H.R.H.	L.H.R.H.	£	s. d.
FS 684		Big end brasses 7 1/2" dia. bore.	M	/	/		
FS 683		" " " " 8" " "	M	/	/		
3/32957		Big end cap	M	/	/		
3/32958		" " bolt 2" dia 16"	M	/	/		
3/32959		" " " 2 1/16" " long	M	/	/		
3/32960		" " " 2 1/16" " "	M	/	/		
3/32961		" " " nut	M	/	/		
14/3280		" " " safety cotter	M	/	/		
16/3257		" " Oilwell Cap (3" dia)	M	/	/		
16/3258		" " " Syphon tube	M	/	/		
16/3259		" " " Spring	M	/	/		
16/3260		Little end brasses (strengthened)	M	/	/		
16/3261		" " " wire (17" long)	M	/	/		
3/32962		" " " nut	M	/	/		
3/32963		" " " bolt (17" long)	M	/	/		
16/3264		Split Pin for L.E. Bolt	M	/	/		
16/3265		Little end wedge block	M	/	/		
3/20370		Adjusting screw nut	M	/	/		
14/3266		Little end oil well cap (2 1/2" dia)	M	/	/		
16/3257		" " " syphon tube	M	/	/		
16/3258		" " " Spring	M	/	/		
16/3259		Bush for "A" Pin Hole (2 1/2" OD)	M	/	/		
3/32951		Big end bolt 2" dia	M	/	/		
3/32952		" " " 2 1/16" " long	M	/	/		
3/32953		" " " 2 1/16" " "	M	/	/		
16/3279		" " oil well cap (2 1/2" dia)	M	/	/		
3/32963		Little end bolts (7 1/2" long)	M	/	/		
3/32964		Bush for "A" Pin Hole (2 1/2" OD)	M	/	/		
14/3277		Little end oilwell cap (2 1/2" dia)	M	/	/		
3/20360		" " wedge block	M	/	/		
		Adjusting screw (short)	M	/	/		

Examined by *[Signature]* Workshop Expenses

(Note "M" refers to Material only)

War Wage

Fig. 4—Material inspection records



piecework price is also indicated for each item. The inspector enters where necessary the repairs required according to his inspection, and the sheet is then forwarded to the wages office when completed.

Apart from the fact that this sheet denotes the nature of all the repairs, it is also an authority for payment for all work so involved. Fig. 6 shows the machine sheet, and all possible machining operations connected with this type of rod are tabulated thereon and a serial number allocated to each operation, also its piecework price. The inspector indicates on this sheet any particular operation or operations required in accordance with his examination. This sheet is also an authority for all wage tickets, to be made out in accordance with the items indicated. In each case a carbon copy of these sheets is retained by the section chargehand to enable him to control the operation in accordance with the report. After the examination and inspection is completed, the rods are conveyed by the lever lift and grab previously described from the inspection table direct to a work fixture for the initial operation of preparing the rods previous to the final fitting and assembling operations.

#### A Labour Saving Fixture

This work fixture is designed primarily with a view to increased production by eliminating all unnecessary movements and also to enable the operator to fix the rod in any desired position with a minimum effort, thereby considerably reducing fatigue. The fixture, Fig. 7, consists of a box bed A, and at each end two supporting brackets B are fixed directly opposite each other. A circular plate C is attached to each bracket and this houses an auxiliary

bracket D which revolves in the circular plate C. This revolving bracket is retained in position in the circular plate C by square head dowel pins E, thus eliminating the necessity of using a retaining ring and at the same time minimising end thrust when positioning the rod in the fixture. The bracket D receives the connecting rod and an adjustment F is provided to suit the various types of rods. This fixture is arranged at a convenient height to enable the rods to be lifted by the mechanical lever lift and inserted in the fixture at G. The bracket D has four equally spaced notches H which engage a spring loaded dowel plate I.

This enables four operating positions of the rod to be quickly obtained and locked in position by the handle J. When inserting the rod in the fixture the bracket D is revolved until the notch H corresponds to the position G. This particular notch is cut away to coincide with the central housing in D, thus enabling the rod to be placed direct in the fixture by the mechanical lever lift and grab. After placing the rod in position it is secured by the locking plate K which hinges on the pin L. A special guard plate M is inserted in the opening G to ensure that no dirt or foreign matter is allowed to enter the bearing of the revolving bracket.

An interesting feature of this fixture is that, apart from the stands supporting the box bed, it is built up entirely of mild steel plate, thereby materially assisting in simplifying the design, and whilst maintaining the necessary rigidity, the weight is also reduced to a minimum. It will also be evident from the line drawing that ample working space is afforded, thus allowing the workman free

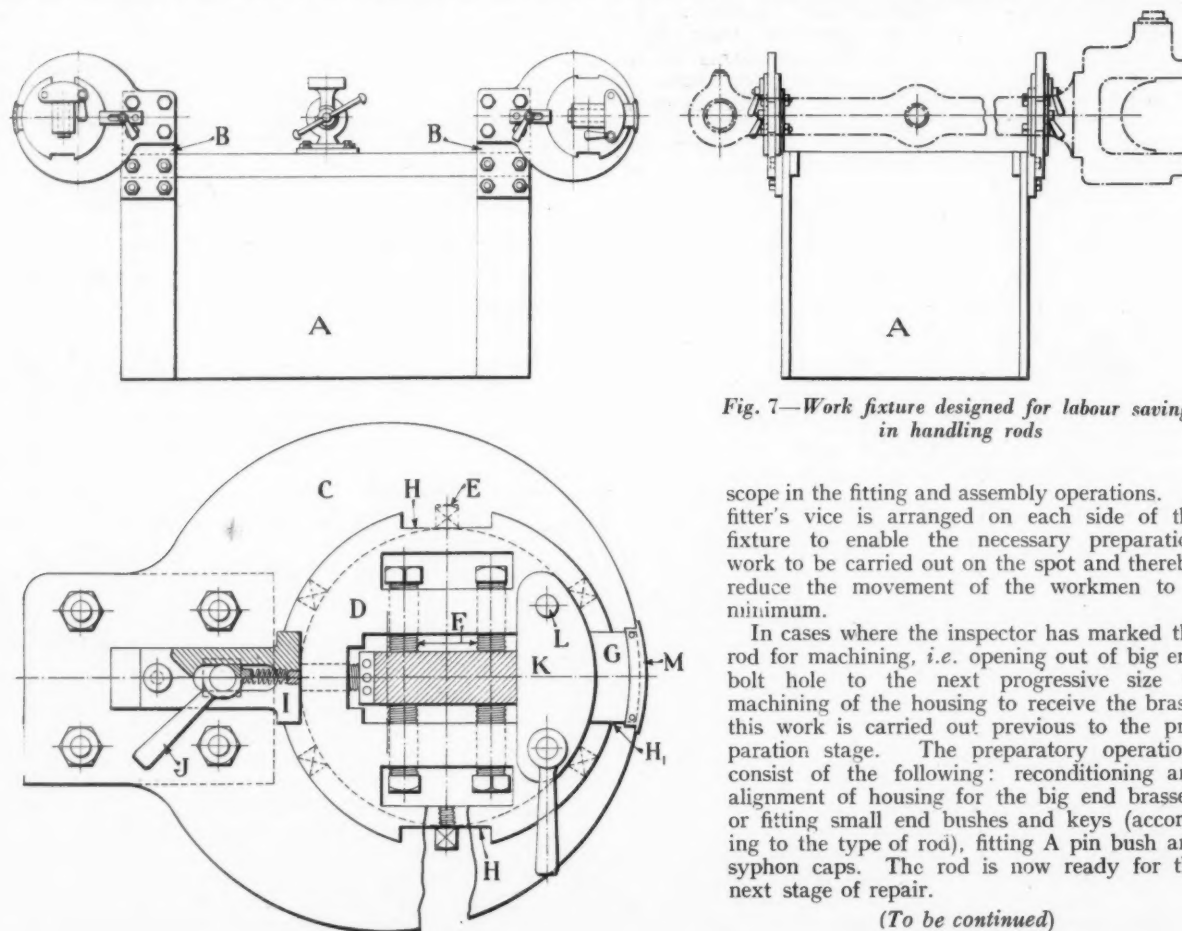


Fig. 7—Work fixture designed for labour saving in handling rods

scope in the fitting and assembly operations. A fitter's vice is arranged on each side of the fixture to enable the necessary preparation work to be carried out on the spot and thereby reduce the movement of the workmen to a minimum.

In cases where the inspector has marked the rod for machining, i.e. opening out of big end bolt hole to the next progressive size or machining of the housing to receive the brass, this work is carried out previous to the preparation stage. The preparatory operations consist of the following: reconditioning and alignment of housing for the big end brasses, or fitting small end bushes and keys (according to the type of rod), fitting A pin bush and syphon caps. The rod is now ready for the next stage of repair.

(To be continued)

## CONDENSING GOODS LOCOMOTIVE FOR RUSSIA

*After 10 years' service, the 0-10-0 locomotive described was converted to condensing operation by Henschel & Sohn A.G., Kassel. Operating data are given showing very satisfactory performance*

*By R. O. ROOSEN, Kassel*

FOR use where water supplies are scarce or of unsuitable quality, the firm of Henschel & Sohn A.G., Kassel, has developed a condensing tender which can be applied to any steam locomotive, thus reducing the net consumption of boiler feed water to an absolute minimum. The condenser operates at atmospheric pressure, thus eliminating the need for auxiliaries to maintain a vacuum, avoiding leakage difficulties, and making it practicable to condense the steam in an air-cooled condenser of reasonable size. No water is required for condensing purposes. A further important advantage is that the locomotive engine is of the usual reciprocating type and operates under normal conditions. The distinctive feature is that the exhaust steam is not discharged through the blast pipe, but is passed first through a turbine-driven blower producing chimney draught, then through a turbine which drives condenser-cooling fans on the tender, and so to the cooling elements of the condenser itself.

The first locomotive of this type was built by Henschel & Sohn A.G. for the Argentine State Railways. This machine\* was subjected to extensive trials by a Technical Commission on the Tucumán-Santa Fé line and in the Chaco, with completely satisfactory results. As shown by Fig. 1, the average water consumption of this

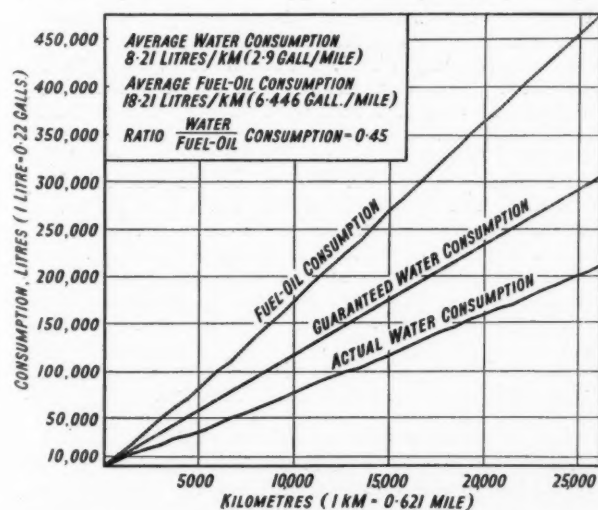


Fig. 1—Water and fuel-oil consumption of Henschel condensing locomotive for the Argentine State Railways

locomotive is only 8.2 litres per km. (2.9 gall. per mile), corresponding to a saving of 95.6 per cent. compared with the water consumption of sister non-condensing locomotives of equal power. Inspection of the boiler after 30,000 km. (18,642 miles) running showed that the heating surfaces were perfectly clean, whereas the tubes of sister

locomotives operating under similar conditions were covered with a deposit about 4 mm. ( $\frac{1}{8}$  in.) in thickness, causing serious corrosion, and very difficult to remove. The adverse effect of scale deposits on heat transmission is shown by the curve in Fig. 2.

The condensing locomotive of the Argentine State Railways has now run well over 100,000 km. (62,100 miles) in charge of drivers and firemen who needed very little training in its use, their duties being practically the same as on an ordinary steam locomotive.

### Conversion of Existing Locomotive

In view of the satisfactory results obtained from the Argentine locomotive, the Russian State Railway decided to entrust Henschel & Sohn A.G. with the conversion of a heavy goods locomotive to condensing operation for service in districts offering difficulties in water supply.

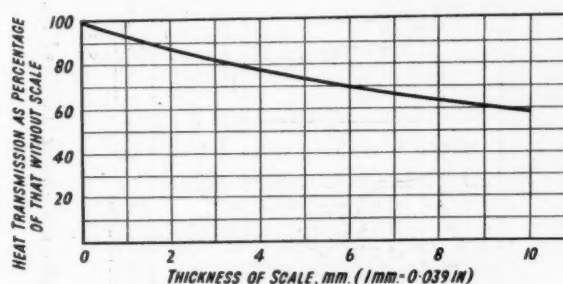


Fig. 2—Effect of boiler scale on heat transmission

The locomotive selected for this purpose was a superheated machine ten years old, with 0-10-0 wheel arrangement. This machine was rebuilt at Kassel and provided with a new condensing tender. An illustration on page 677 shows the reconstructed locomotive ready for dispatch to Russia, and another picture the machine in service on the shores of the Caspian Sea.

The converted locomotive weighs about 70 metric tons (68 tons 18 cwt.) empty, and 84 metric tons (82 tons 13 cwt.) in running order. The tender weighs 51 metric tons (50 tons 4 cwt.) empty and about 71 metric tons (69 tons 17 cwt.) in running order, carrying 10 metric tons (2,200 gallons) of water and 10 metric tons (9 tons 17 cwt.) of fuel. Firing was originally by coal, but was subsequently converted to naphtha.

The climatic conditions in Turkestan are yet more difficult than those in Argentina for locomotive operation. The maximum air temperature in summer is about 50° C. (122° F.) and temperatures as low as -40° C. (40 degrees below zero F.) are experienced in winter. Special heating arrangements are therefore required to prevent freezing.

Fig. 3 shows the general arrangement of the locomotive and tender equipment. The condensing plant is designed solely from the standpoint of saving water, and without any intention of reducing the fuel consumption. No vacuum is employed, and the heat of the exhaust steam

\* Fully described in *The Railway Engineer*, June, 1932, p. 230.

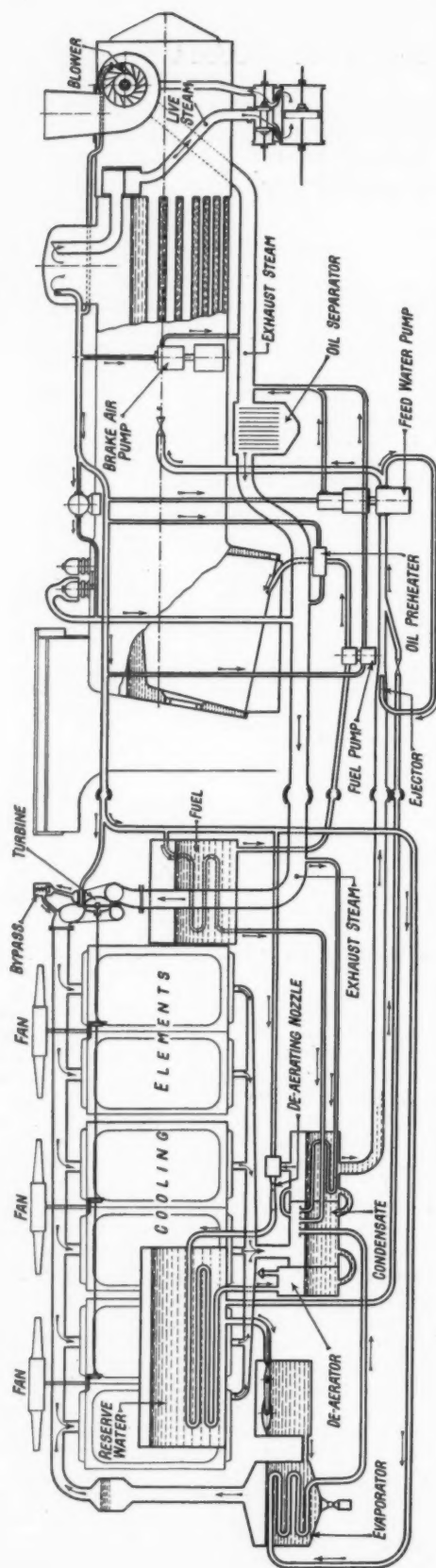


Fig. 3—Showing layout of induced draught, condensing and feed equipment on Henschel condensing locomotive

is removed from the condenser by a current of air produced by fans arranged as shown.

Energy available in the steam leaving the locomotive cylinders is used to drive an induced draught fan and a turbine driving the condenser fans. This is effected while maintaining in the locomotive cylinders practically the same back-pressure as in an ordinary locomotive with blast-pipe exhaust. After leaving the cylinders, exhaust steam flows through the blower-turbine on the smokebox, and thence through a pipe alongside the boiler barrel to an oil separator which removes nearly all traces of lubricating oil from the steam. The purified exhaust then flows through a pipe with a ball and socket joint to the tender, where it drives a turbine geared to the cooling fans and finally passes to the condenser elements as shown in Fig. 3. Measured values of the exhaust steam pressure immediately in front of the fan-turbine are plotted in Fig. 4.

Condensate leaving the condenser flows through an oil filter to a tank serving the two feed pumps of the boiler. Exhaust steam from the auxiliaries, such as the braking-air pump and feed pumps, is led to the main exhaust pipe, which also receives any steam blown off at the safety valve.

Unavoidable small losses, such as drips from the cylinder drain cocks, are replenished from the main water tank on the tender. Make-up water does not, however, flow straight to the boiler but is first purified by an evaporator heated by a live steam coil. Vapour from the evaporator flows to the condensers (see Fig. 3), and condensate from the heating coil passes to the feed tank. The raw water is thus completely softened before use as make-up, and experience shows that the cleaning of the evaporator presents no difficulty.

The induced draught equipment comprises a shaft extending across the smokebox carrying a blower wheel at the centre; it is driven by an exhaust turbine mounted at the side of the smokebox. As shown by measurements plotted in Fig. 5, the blower is capable of maintaining 200 mm. ( $7\frac{1}{2}$  in.) W. G. reduction of pressure in the smokebox. Moreover, the draught varies automatically with the amount of steam exhausted by the cylinders, and the driver is no more concerned with the maintenance of draught than he is in an ordinary locomotive. A live steam connection to the blower turbine, controlled by handwheel and spindle from the driver's cab, provides for steaming up the engine when at a standstill, and enables the firing to be forced whenever necessary.

The connections between locomotive and tender for exhaust steam, feed water, and so on, are by ball-joint pipes or flexible hose as the case may be. All have proved very satisfactory in service. The illustration on page 678 shows the cab end of the tender, and the large ball joint for the exhaust steam connection.

### Condensing Equipment

The frame of the tender is of welded construction. It is mounted on two bogies and carries the condensing equipment, raw water tank, fuel tank, and make-up feed evaporator, the latter being suspended beneath the frame at one side.

The condenser comprises 18 elements, nine on each side of the tender. Each element consists of several rows of drawn copper tubes, elliptical in section and provided with cooling fins. The steam to be condensed flows through these tubes, over the outer surface of which cooling air is drawn by three fans designed in accordance with aerodynamic principles. Each fan serves six condenser elements, three on each side of the tender, air ducts being arranged accordingly. A raw-water tank of 10 cu. m. (2,200 gall.) capacity is placed between the



air ducts leading to the fans. The fan shafts are vertical and are driven, through bevel gearing, from a horizontal shaft connected by a flexible coupling to the exhaust turbine at the front of the tender.

The performance of the condenser varies automatically with the output of the locomotive. As the quantity of exhaust steam increases, the speed of the turbine rises and the fans draw more cooling air through the condenser elements.

When the locomotive is at a standstill but with its auxiliaries working, the exhaust steam from the feed pump, induced draught turbine, air pump, lighting generator, and so on, is generally sufficient to operate the fan-

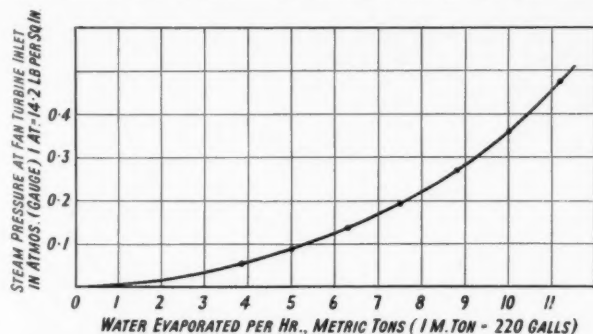


Fig. 4—Steam pressure at inlet to fan turbine of condensing locomotive

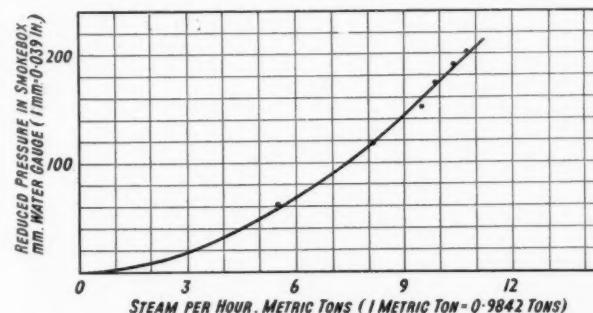


Fig. 5—Reduced pressure in smokebox at various rates of steam consumption

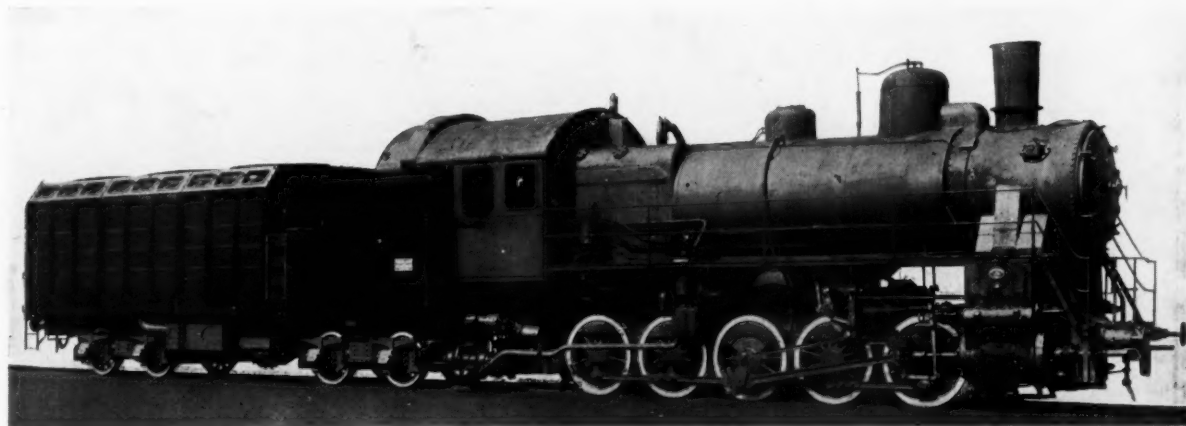


Condensing 0-10-0 superheated goods locomotive in service on the shores of the Caspian Sea

turbine so that this exhaust steam is duly condensed. A live steam nozzle is, however, provided on the turbine so that adequate cooling of the condenser elements can be secured even under such exceptional conditions as the locomotive standing for considerable periods in the glaring sun.

The maximum speed of the exhaust turbine is about 7,000 r.p.m. and that of the condenser fans about 1,000 r.p.m. The whole equipment is designed to ensure the condensation of all the steam even with atmospheric temperatures as high as 50° C. (122° F.). Such temperatures occur only during a part of the summer and then only for some hours daily. With lower atmospheric temperatures, a smaller air flow suffices for the complete condensation of the steam, and if the full air flow be maintained it results in needless, and therefore wasteful, cooling of the condensate. To avoid this, a by-pass valve is provided on the fan turbine so that some of the exhaust steam can be passed straight to the condenser. This valve, which is also arranged to act as an automatic safety valve, is adjusted by hand—say, once a day—according to the atmospheric temperature and the temperature of the condensate. In all other respects, the operation of the condensing equipment is completely automatic.

From the accompanying curves, showing the behaviour



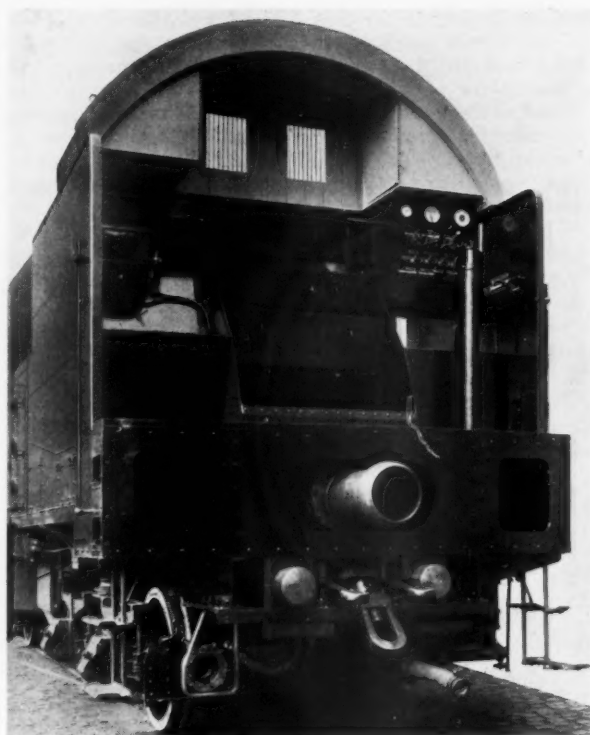
Heavy 0-10-0 superheated goods locomotive of the Russian State Railway as converted to condensing operation by Henschel & Sohn A.G., Kassel

of the Henschel patent condensing equipment, it will be seen that this method of converting a locomotive to condensing operation involves practically no alteration in the power characteristics of the machine. Apart from the saving of water there are other advantages; notably, the higher heat transmission from products of combustion to boiler water, owing to the clean surfaces resulting from the use of condensate as feed; and the longer life and reduced costs of cleaning due to the elimination of boiler scale.

#### Performance Data

Trials at Moscow and on the Aschchabad-Krassnovodsk line (Turkestan) show that—even with naphtha instead of coal firing, involving a greater consumption of water and steam for atomising the fuel—there is no difficulty in improving upon the Henschel guarantee, viz. 800 km. (497 miles) running without replenishing the initial filling of 10 cu. m. (2,200 gall.) of raw water. Actually, the average water consumption is 12 litres per km. (4.248 gall. per mile).

Unlike the condensing locomotive of the Argentine State Railway, the Russian machine employs steam-atomisation, instead of pressure-atomisation, for its oil fuel. The steam used by the burner is lost up the chimney, and if its amount be taken as about 0.35 kg. of steam per kg. of fuel oil (or 0.35 lb. per lb.), the net loss of water by the locomotive itself is about 8 litres per km. 2.83 gall. per mile). In other words, the saving of water is equal to that of the Argentine locomotive, a remarkable performance considering that the Russian locomotive had been ten years in service before it was returned to its builders for conversion to condensing operation.



Front view of Henschel condensing tender, showing ball joint for main exhaust connection

### 67 m.p.h. on the 3 ft. 6 in. Gauge South African Railways

(See article on page 689 and editorial note on page 662)



Test train headed by 19 C class 4-8-2 type locomotive No. 2463, prior to the return run from Wellington to Cape Town

## RAILWAYS AND ROAD TRANSPORT SECTION

*This section usually appears at four-weekly intervals. We propose to publish the next with the issue dated November 8 so as to coincide with the Commercial Motor Transport Exhibition*

### Noise

IN last week's issue of THE RAILWAY GAZETTE brief reference was made to the first interim report of the Departmental Committee on Noise in the operation of mechanically propelled vehicles, in which recommendations are made to the Minister of Transport as to regulations which might be drawn up to ameliorate traffic noise. From the information given it appears that, broadly speaking, it is only certain commercial vehicles that are somewhat noisy and it is suggested that in many cases they could be improved by attention to engine and gear noise and, in a less degree, exhaust noise. This conclusion is the more surprising inasmuch as the tests were made with modern vehicles which are undoubtedly much quieter than the older type, and no doubt the vehicles that will be seen at Olympia in a few days' time will be even more silent. Briefly it is suggested that on and after August 1, 1936, no vehicle shall be sold for use in this country unless it can pass the following tests:

**Normal Running Test.**—When the vehicle is driven with full throttle at 30 m.p.h. (or at the maximum legal or possible speed, if less than 30 m.p.h.) using the gear preferred by the driver, the loudness measured at a point 18 ft. to one side of the vehicle shall not exceed 90 phons.

**Running Engine Test.**—When the vehicle is stationary with the engine running at the speed which would give maximum power output the loudness 18 ft. behind the exhaust pipe shall not exceed 95 phons.

It is suggested that in the case of motor cycles and com-

mercial vehicles the above noise levels shall be relaxed to the extent of 5 phons for a period of two years in order to give manufacturers time to carry out the necessary experiments to improve their products. That is all very well as far as it goes but beyond the suggestion that the Minister should make an order prohibiting the racing of the engines of stationary vehicles no attempt seems to have been made to deal with the noises that are mainly attributable to neglect. The committee envisage a system of type tests whereby the manufacturers would submit to an approved testing establishment a sample product for test and approval. What is needed, however, is some means whereby the noisy vehicles may be eliminated from the roads so that the owners of fleets who spend large sums of money on careful maintenance should not be penalised at the expense of careless and irresponsible operators.

### Squeak

IT is rather surprising that there is no mention in the report of brake squeak which is the subject of a report just published by the Research and Standardisation Committee of the Institution of Automobile Engineers. The report is a most interesting one and although it is clear that there is still scope for much research and experiment on this subject it is clear that sufficient is known to eliminate squeaks by slight changes in design. At the same time it is reassuring to know that a squeaking brake is an effective one.



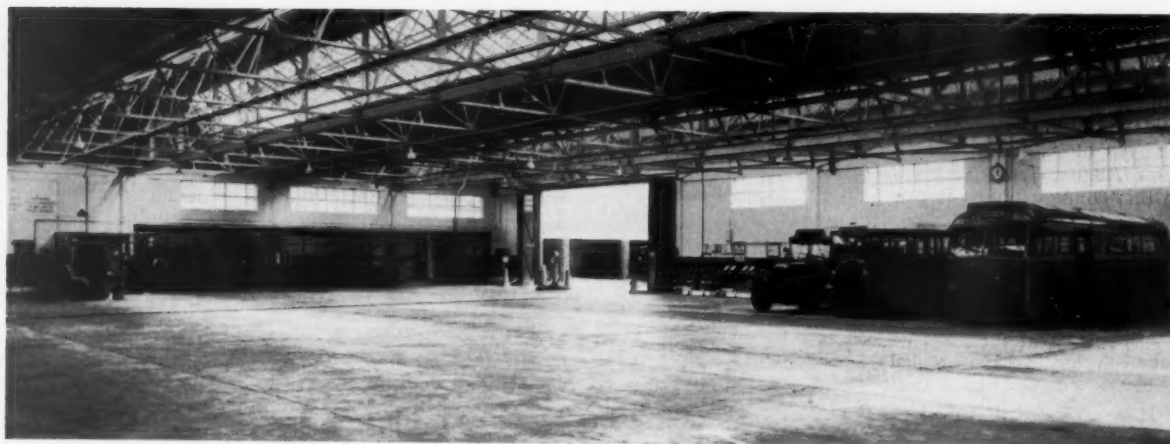
One of the Thornycroft buses in the service of the Ramleh Electric Railways in Alexandria. These vehicles, which have compartments for two classes of passengers, were described and illustrated in "The Railway Gazette" of December 21, 1934



## London Transport Country Service Garages



*The old garage at Amersham of the Amersham and District Company*



*Interior of the new London Transport garage in Amersham*



*This view of the new London Transport garage at Amersham brings out the simplicity of the main building*

## London Transport Country Services Organisation

*In the following article brief descriptions are given of four new garages typical of those now being included in the organisation of the Green Line and Country Bus Services of the London Passenger Transport Board in the area north of the Thames*

WHEN it is remembered that the Green Line and Country Bus side of the London Passenger Transport Board's activities represents the fusion of 74 undertakings it must be realised that a considerable amount of co-ordination and reorganisation has been necessary. Some evidence of the efforts being made to improve the services has been seen in the introduction of newer type vehicles, the erection of shelters at many points and, where there is not sufficient room for that, a special type of canopy shelter, as well as the placing in position of stop signs giving information of a helpful nature.

Some idea of the inner working of the present organisation was given to a party of Press representatives on Tuesday last during a tour in the Northern area, made under the auspices of the board, during which four typical garages were visited. Those garages in the Country Services area taken over from the former owners were in many cases unsuitable for the purpose and it was essential to build new ones or modernise the old. This work has been rapidly pushed forward and six new garages have been built, namely, at Amersham, Tring, Hemel Hempstead, Hertford, Epping, and Grays. Plans are in hand for further garages at Northfleet, Addlestone, Staines and St. Albans, and for the enlargement and modernisation of the existing garages at Windsor, High Wycombe, Luton, and Hatfield. In addition, the building of more garages and other reconstructions are being considered.

Before dealing with the new garages a word or two may be said as to the organisation for which they have been designed. For the docking and inspection of the vehicles, which is carried out on a mileage basis, the area has been divided into six districts, each with a parent garage at a convenient central point. Such a parent garage is Hertford where special machinery is installed over and above the requirements of a subsidiary garage, while the

store area is proportionately larger and the engineering staff more numerous.

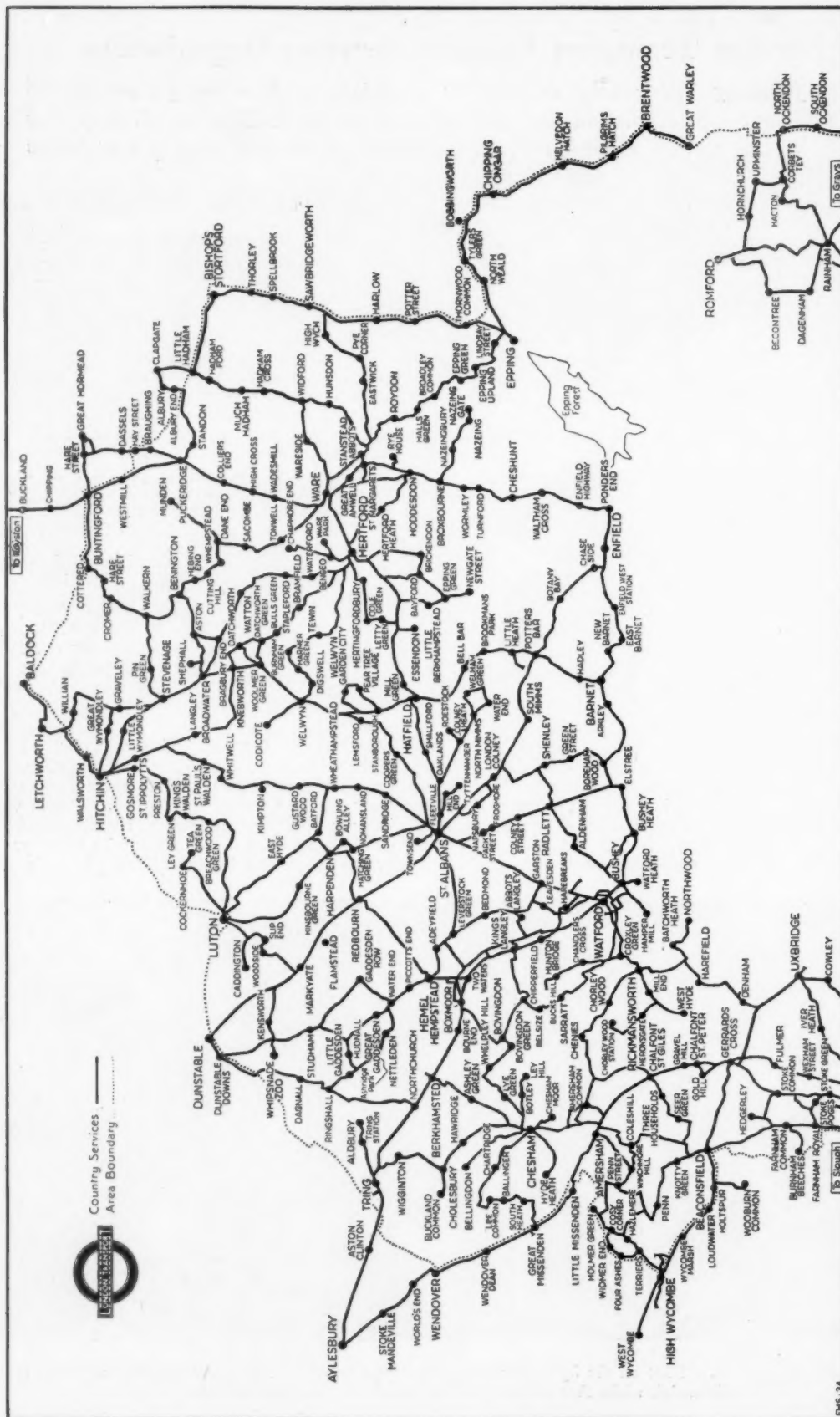
The garages visited were Amersham, Hertford, Hemel Hempstead, and Epping, and from our illustrations it will be seen that they are simple design, constructed of brick to harmonise with their surroundings. At Amersham the roof is tiled, at Hemel Hempstead and Epping a special non-corrosive metal is used, while at Hertford the roof is wood covered with bitumastic felt with corrugated asbestos on the lower slopes. Whenever the situation permits a separate entrance and exit is provided, with large Esavian doors, as at Amersham, but in other garages the vehicles enter and leave by the approach road between the garage and the offices, which prevents congestion of the public highway and enables the garage staff to check the movement of the buses.

The equipment of the buildings is arranged in accordance with the board's standard practice to facilitate maintenance operations. The fuel pumps are placed by the entrance doors so that as the vehicles are driven in at the completion of the day's work, the fuel tanks are replenished. The vehicles then pass to the washing stand, where the hoses suspended from the roof are raised and lowered by wires. The surplus water drains away through a grating into the drains. The bus is then parked in position ready for the run-out in the morning and the interiors are thoroughly cleaned out by vacuum cleaners, operated from plug-in points on the walls. At each garage there are three or four inspection pits, but at parent garages, like Hertford, there is a bank of five, as we illustrate. These pits are placed to one side away from the entrance and exit so as not to interfere with vehicles going in or out. They are faced with white glazed bricks with electric lights inset in the walls, with plugs provided for movable inspection lights. Each pit leads into a



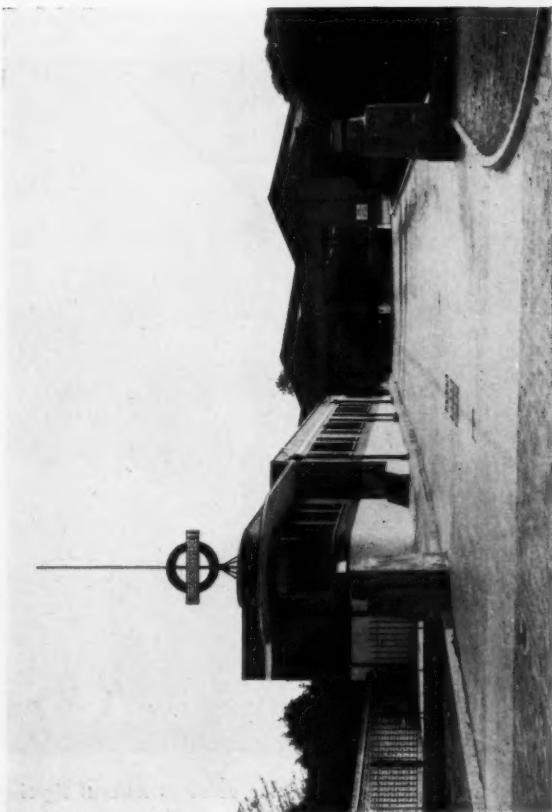
London Transport shelters. That on the left shows the canopy type where lack of space prevents anything more substantial, while that on the right includes seats and framed maps

# London Transport Country Bus Services in the Northern Area



This map shows the network of country bus services that has resulted from the co-ordination which followed the fusion into London Transport of many competing undertakings. These services, as well as the coach services, are run from garages at Amersham, High Wycombe, Tring, Hemel Hempstead, Luton, Hatfield, Hertford, St. Albans, Epping, and Grays. Six of these garages, including the "parent" garage at Hertford, are new buildings, others have been enlarged and modernised and that at St. Albans is to be rebuilt. The building of further garages and the modification of others is under consideration. The dotted line indicates the London Passenger Transport Area Boundary.





*The new London Transport garage at Hemel Hempstead with the office buildings on the left*



*The approach road to the parent garage at Hertford. Note the office buildings*



*Interior of the Hemel Hempstead garage*



*Interior of the garage at Epping*

transverse connecting shop in which are placed the work benches. Removable metal gratings are provided for each pit. Close to the pits are the tyre store, the store for spare parts, and the foreman's office. The air compressor plant to fill portable cylinders for tyre inflation, the vacuum cleaning plant, and the electric fuel pump are grouped along one of the walls.

The roofs are of a single span, generally of cantilever construction, but at Hertford the double cantilever truss type has been adopted. At Amersham, Hemel Hempstead, and Epping garages continuous skylights have been inset in the pitched roofs, with windows at the tops of the walls. At Hertford, with its two plane roof sloping each way from the centre, continuous lantern glazing has been used.

At each garage, separate brick-built offices are provided to free the staff working there from the dirt and noise of the garage. These offices are generally separated from the garage by the approach road and the office block includes the offices of the District Inspector, the Depot Engineer, and the District Superintendent with his staff, where one is resident, as well as the traffic office, conductors' room, canteen, and boiler room, with the central heating plant. The conductors' room is always next to the traffic office, with communication provided by glazed hatch openings and metal screen for giving out and receiving ticket boxes and paying-in cash. In each traffic office there are racks and a table at which the ticket boxes are made up, and a ticket store room or cupboards.

The Amersham garage, designed by Messrs. Wallis, Gilbert and Partners, was built by J. Jarvis and Sons, Ltd., and completed last month. Its main dimensions are 150 ft. by 130 ft. and from it are operated 15 coaches and 36 buses, maintaining three coach and 11 bus services. The staff includes 144 on the traffic and 45 on the engineering sides.

The Hemel Hempstead garage, also designed by Messrs. Wallis, Gilbert and Partners, was built by A. T. Rowley

(London) Ltd. and finished in April last. It is 150 ft. by 140 ft. and accommodates 15 coaches and 35 buses working one coach and 11 bus routes. The staff includes 128 on the traffic and 31 on the engineering sides.

The parent garage at Hertford was designed by the board's own architect and built by Ekins, Limited; it was completed in January, 1935. The building measures 177 ft. by 151 ft. and houses 16 coaches and 45 buses working three coach and 15 bus services. This garage employs 232 on the traffic and 74 on the engineering sides. It replaces two garages at Ware and undertakes the major running repairs of vehicles at Luton, St. Albans, Hitchin, and Hatfield garages. Arrangements have been made for extensions should they become necessary.

The Epping garage, designed by Messrs. Wallis, Gilbert and Partners was completed by A. T. Rowley (London) Limited in September of last year. It is 141 ft. by 104 ft. and accommodates 26 coaches and three buses for three coach and one bus services. Its staff comprises 139 on the traffic and 27 on the engineering sides.

Among the equipment at these garages may be noted the William Douglas petrol pumps, except at Epping where the Hammond electric type are installed. The vacuum cleaners are of the B.V.C. type by the British Vacuum Cleaner & Engineering Co. Ltd., while the air pumps and compressors are by the Equipment & Engineering Co. Ltd. Lathes, drills, and grinders by Buck & Hickman Ltd. are included among the tools; at Hemel Hempstead there is a Rotax universal valve refacer, and at Hertford a portable engine starter by the Equipment & Engineering Co. Ltd. Pyrene hand fire extinguishers are hung at various points, and at several garages the Mather & Platt sprinkling system is installed. The big folding doors are of the Esavian type by the Educational Supply Association. There is a Hewitt electric plant for charging batteries and the Benjamin system of lighting is installed.



*A view of the pits at the Hertford garage which illustrates their convenient arrangement, the excellent natural lighting, and the benches on the sunken floor. One of the pit lights will be noticed in the bottom right-hand corner*

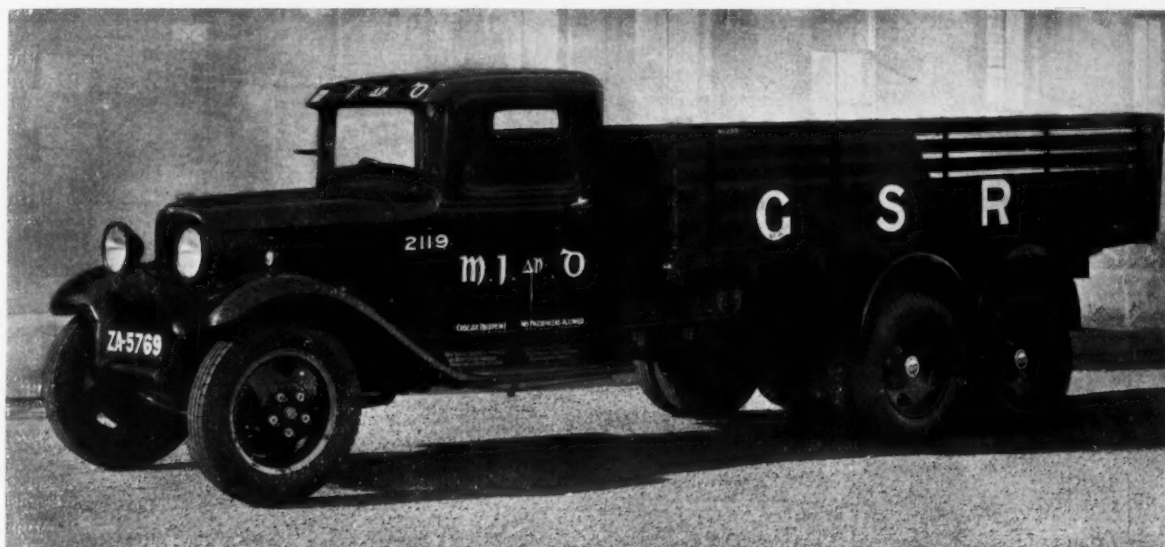
## Beet Transport in the Irish Free State

**T**HERE are now four sugar beet factories in the Irish Free State, situated at Carlow, Thurles, Mallow and Tuam, and it is expected that the total demand for sugar in the Free State will be sufficiently met from their products. The raw beet is brought from the farms by rail, or by road, or by road and rail combined. Last season the beet was conveyed by rail from the Carlow area across the country to Tuam, as sufficient quantity of root was not grown in that area. For the present campaign arrange-

a larger amount of road transport will be required. In order to meet the demands the railway company have put into service 162 additional lorries, primarily for use for this traffic.

The chassis are of the Surrey type, built at Cork by Henry Ford & Sons. They are designed for a load capacity of four tons and are carried on ten tyres. The engine has four cylinders and is rated at 24 h.p.

The bodies were built at the Great Southern Railways



ments were made to procure the supplies from farms within the district served by each factory, with the result that the bulk of the beet carried by rail for long distances to Tuam last season will be taken by road from places where road haulage is more suitable. In addition, the Great Southern Railways Company, under the terms of the legislation recently enacted, are purchasing the licences of a large number of road hauliers and the transport of beet formerly conveyed by these carriers falls to the railway company. Furthermore, owing to the increased manufacture

Company's works at Inchicore, Dublin, to the design of Mr. A. W. Harty, Chief Mechanical Engineer, and have removable sides and ends making them suitable for various classes of traffic besides that of carting beet. The dimensions of the body are, length 13 ft. 0 in., width 6 ft. 6 in. and depth 2 ft. 6 in. They are painted in red, this being the company's standard colour for road transport vehicles, the necessary lettering and numbering being carried out in white. All the lettering is in Irish and English, and even the Manager's name is shown in the two styles.

## The Lynton & Barnstaple Railway

Following the closing on September 30 of the narrow-gauge railway between Lynton and Barnstaple, the Southern Railway has arranged for considerably increased passenger facilities to be provided by the Southern National Omnibus Co. Ltd. Passengers can now obtain through rail-road tickets to Cheltenham, Bratton Fleming, Blackmoor, Parracombe, Woody Bay, and Lynton, while, in the reverse direction, through road-rail tickets are issued at Lynton. The bus service now comprises four through journeys each weekday between Barnstaple Junction station and Lynton, with extra trips on certain days; there is no Sunday service in the winter months. Last winter there was but one bus journey each way, and that on Tuesdays and Fridays only; even the summer service has provided only three return trips on weekdays and one on Sundays. Satisfactory services for the conveyance of parcels, goods, and mineral traffic by road are now provided by Chaplins Limited.

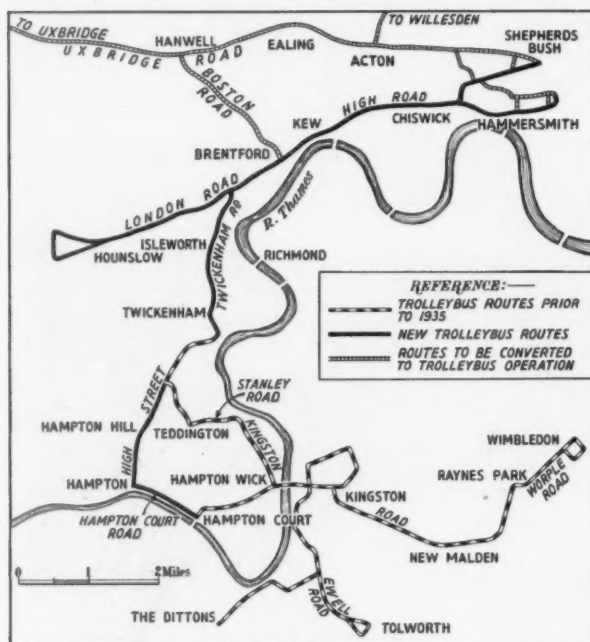
## Long Distance Coaches in the U.S.A.

For the extension of its lines from Cheyenne, Wyo., to Casper, Cody, and Billings, the Burlington Transportation Company has put into service a novel type of vehicle which looks more like an elongated private car than a coach. To meet the requirement of a low-cost unit for long distance travel it was decided to take the Chevrolet master sedan type and extend it to include two additional cross seats and so arrange for accommodation for 11 passengers. The wheelbase was extended to 15 ft. 4 in. and heavier springs were fitted. The driving shaft extension is in two parts, with cross members, housed roller bearings and universal joints. Four of these coaches are in regular services, and it is stated that the fuel consumption works out to 17 miles a gallon, with the other operating costs correspondingly low. A special feature of the seating accommodation is the amount of room which is given to each passenger. Parcels and light luggage are carried in a tray on the roof.



## New London Transport Trolleybus Routes

ON Sunday next, October 27, the London Passenger Transport Board is inaugurating services of trolleybuses from Shepherd's Bush via Chiswick, Kew, and Brentford to Hounslow, and from Hammersmith via Chiswick, Kew, Brentford, Twickenham, and Hampton



Hill to Hampton Court. The tramway services at present running on these routes will be withdrawn. These are the first tram routes to have been converted to trolleybus working since the formation of London Transport. The new routes, as shown on the accompanying sketch map, complete the conversion of the whole of the former London United Tramways system in the Thames Valley, and leave only the main Uxbridge Road service and the branch from Hanwell to Brentford of the old company yet to be con-

verted. On the routes to be opened on Sunday 70-seat trolleybuses are to be employed.

The next 15 miles of tramway to be converted by London Transport, from Woolwich to Plumstead, Erith, Bexley, and Dartford, will be opened during November with 60-seat trolleybuses. A further 10 miles, between Sutton, Croydon, and Crystal Palace, will be opened in December, and 60-seat vehicles will be also used on this route.

## Recent Additions to S.M.T. Fleet

TO the very extensive fleet of motor vehicles operated by the Scottish Motor Traction Co. Ltd. there is now being added a batch of 40 oil-engined A.E.C. Regals, 15 of them being fitted with bus bodies, and the other 25 with coach bodies as shown in the photograph reproduced below.

In each case there is a roof of the domed type and an all-weather hood extending from the front of the vehicle to the luggage container at the rear. There is a front entrance sliding door, while the emergency door at the back is accessible from inside or outside. There are twelve half-drop windows, with louvres extending over each pair, divided by chromium-plated pillar strips. The ventilation scheme includes six extraction type vents on the roof sides, supplemented by an injector ventilator at the forward end of the roof. In winter the passengers will have the benefit of the Clayton heating system.

A valuable contribution to the cheerfulness of the interior is provided by the brown futuristic figured moquette of the upholstery; the seats are made up of Dunlopillo cushions and moulded back squabs. The facings are of matching leather. Below the window line the panelling is covered with Rexine of a similar colour, and the decorative harmony is completed by a brown carpet runner extending the full length of the central gangway. Parcels may be placed on the racks panelled arranged above the windows. Twelve pillar and three roof lamps provide ample illumination, and the various interior fittings are finished either in chromium plate or non-flam Doverite.

When this order has been completed, the Scottish Motor Traction Co. Ltd. will have more than 170 A.E.C. Regals in service, and more than three-quarters of that number are equipped with the A.E.C.-Ricardo oil engine.



One of the latest A.E.C. Regal oil-engined coaches for S.M.T. services

## RAILWAY NEWS SECTION

### PERSONAL

The Lord Chancellor has appointed Mr. Henry Lancelot Hingston Hill, F.C.A., to the vacancy created on the London Passenger Transport Arbitration Tribunal by the death of Sir James Martin.

Mr. Alistair Fraser, K.C., one of best known railway officials in Canada, whose appointment as Traffic Vice-

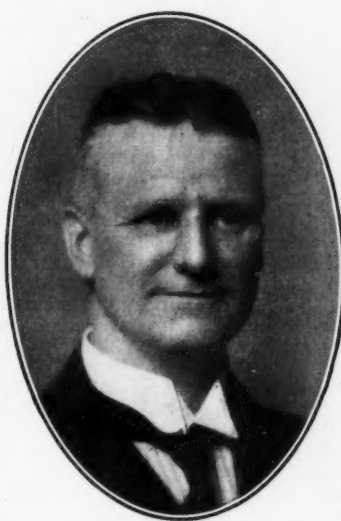
was appointed Assistant General Counsel, continuing his duties as representative of the system before the Railway Commission up to the time of his appointment as Acting Vice-President, Traffic Department, in October, 1932, this appointment being confirmed in May, 1934.

Mr. J. M. Wildsmith, who, as announced in THE RAILWAY GAZETTE of October 11, has been appointed to the

tinuously until 1925 and served in turn in the Traffic, Assistant General Manager's, and Rates offices. From 1925 until 1928 he held a position in the Publicity Department's office in London, but was appointed Tourist Agent at Durban in 1929, becoming Publicity and Travel Agent at the same centre shortly afterwards. In February of this year Mr. Reyneke was transferred with similar rank to Cape-town, and was recently promoted to



**Mr. Alistair Fraser, K.C., M.C.,**  
Traffic Vice-President, Canadian National Railways



**Mr. J. M. Wildsmith,**  
Appointed District Goods Manager, Newport, G.W.R.



**Mr. P. G. B. Reyneke,**  
Appointed Director, Publicity and Travel Bureau, South Africa House

President, Canadian National Railways, was recorded in THE RAILWAY GAZETTE of May 18, 1934, is now making a short business tour in Europe. Mr. Fraser, who is a son of the late Hon. D. C. Fraser, former Lieutenant-Governor of Nova Scotia, was called to the Bar in 1911 and created King's Counsel in 1921; thereafter he practised law in eastern and western Canada until the outbreak of war. He served with the 17th Battalion, C.E.F., the Princess Patricia's Canadian Light Infantry, and the 15th Battalion as Captain, Company Commander and Adjutant, was awarded the Military Cross at Vimy Ridge, promoted Major, and later appointed an A.D.C. to General Sir Arthur Currie, Commander of the Canadian Corps. After demobilisation in 1919, he joined the Canadian National Railways as General Solicitor, becoming Commission Counsel in 1923. As Commission Counsel he represented the railway before the Board of Railway Commissioners of Canada and the Interstate Commerce Commission of the United States. In 1929 Mr. Fraser

District Goods Managership at Newport, G.W.R.—rendered vacant by the retirement of Mr. W. Powell—joined the Traffic Department in the Bristol area in 1898, and there gained experience both at stations and in the Divisional Superintendent's Office. In 1913 he was transferred to the Chief Goods Manager's Office, and eight years later was appointed Chief Clerk to the Cardiff District Goods Manager. In January, 1930, he was promoted to the post of Assistant District Goods Manager, London, and, on absorption of the Reading into the London Goods District, took up headquarters at Reading, his duties being mainly confined to the western part of the London District. This position he now vacates on his appointment to Newport.

Mr. P. G. B. Reyneke has been appointed Director, Publicity and Travel Bureau, South Africa House, in succession to Mr. G. E. Chittenden who is shortly to return to South Africa.

Mr. Reyneke started his railway career in 1903 at Johannesburg. He was stationed at headquarters con-

tinuously until 1925 and served in turn in the Traffic, Assistant General Manager's Office at Johannesburg.

The Institution of Civil Engineers has made the following appointments as a result of the death of Mr. W. W. Grierson, Past-President.

Sir Clement Hindley, K.C.I.E., M.A., M.Inst.C.E., sometime Chief Commissioner of Railways in India, to be representative of the institution on the General Board of the National Physical Laboratory.

Mr. Raymond Carpmal, M.Inst.C.E., Chief Engineer, G.W.R., to be a member of the Court of Governors of the University of Bristol.

Mr. A. E. le Cheminant, who, as recorded in our issue of June 11, has been appointed Assistant District Goods Manager, London, G.W.R., joined the service in February, 1908, in Guernsey. Seven years later he was transferred to headquarters, but after a year there he joined the colours. In 1928 Mr. le Cheminant was posted to New York

as one of the company's representatives in America. He returned to England in 1930 to become Principal Clerk to the Chief Goods Manager's Development Department, and in the following year was promoted to the post of Chief Clerk to the Liverpool District Goods Manager, which position he relinquishes to take up his new duties in the London District.

Mr. Arthur A. Ryan, who has been appointed Hotels Superintendent, North



**Mr. Arthur A. Ryan,**

Appointed Hotels Superintendent, North Eastern Area, L.N.E.R., commencing January, 1936.

Eastern Area, L.N.E.R. (in succession to Mr. H. Gent, who will retire under the age limit in January next), was born in 1884, and educated at St. Mark's College, Chelsea. He served for three years with the Surveyors to the Ecclesiastical Commissioners for England, prior to entering the Hotels Department of the former London & North Western Railway service in 1904, and, during his 10 years in that department, was responsible for much of the work in connection with hotel reorganisation and general improvement throughout the system. In 1914 he was appointed Hotels Manager, Great North of Scotland Railway, at Aberdeen, but in 1918 he held a commission in the R.N.V.R. and was engaged in mine sweeping. It was in March, 1925, that Mr. Ryan was appointed Hotels Manager, Southern Scottish Area, L.N.E.R., the position he now vacates to take up his duties in a similar one in the North Eastern Area.

The seventh Duke of Buccleuch, K.T., who died in the early hours of Saturday, October 19, was, as Earl of Dalkeith, Chairman of the North British Railway Company from 1905 to 1912, when for personal reasons he resigned the chairmanship in favour of Mr. William Whitelaw. He joined the board of the North British Railway Company in 1901, and became Deputy-

Chairman in 1904, reverting to that office in 1912, on his resignation of the chairmanship. He remained Deputy-Chairman until December 31, 1922. He succeeded his father in the dukedom in 1914. At the half-yearly meeting of the company in September, 1912, Mr. Whitelaw, who had then become Chairman, said that when Lord Dalkeith assumed the chairmanship in 1905 the condition of the company was very different from that which it enjoyed in 1912, and the remarkable improvement which had taken place in every department during those seven years was the best testimony to his work.

We learn with regret of the death, on October 13, of Mr. W. C. E. Smith, M.Inst.C.E., sometime General Manager, Egyptian Delta Light Railways, at the age of 75.

Mr. F. L. Creswell, M.C., M.Inst.C.E., Chief Engineer, Buenos Ayres Great Southern and B.A. Western Railways, returned to Buenos Aires from leave in Europe on September 23.

Mr. W. T. Everall, O.B.E., Deputy Chief Engineer, Bridges, N.W.R., India, has been permitted to retire from Government service as from August 27. Mr. Everall's portrait and biography were published in THE RAILWAY GAZETTE of March 29 last.

At the usual meeting of the General Managers of the Irish Railways held at the Irish Railway Clearing House, Dublin, on October 17, Mr. J. Whyte, General Manager, Londonderry & Lough Swilly Railway, was appointed Chairman of the Irish General Manager's Conference for the forthcoming year.

Mr. D. Liebbrandt, Chief Electrical Engineer, South African Railways & Harbours, has been appointed Chief Stores Superintendent in succession to Mr. H. J. Lyddon who proceeds on leave prior to retirement. Mr. Liebbrandt will continue to supervise the electrification works on the Western Transvaal and Natal Systems in a consulting capacity.

Mr. W. J. Clayton, F.A.I., Estate Agent to the Southern Railway, is retiring at the end of the year after 54 years' service with that company and the South Eastern Railway. The directors have appointed Mr. A. Endicott, M.B.E., F.S.I., of the Directorate of Lands and Accommodation, H.M. Office of Works, to succeed him as Surveyor and Estate Agent.

Mr. E. Crossley, M.I.Loco.E., who, as recorded in THE RAILWAY GAZETTE of July 19, had been appointed District Locomotive Superintendent, Edge Hill (Liverpool), L.M.S.R., joined the former Lancashire & Yorkshire Railway in 1901, and from 1904-9 gained varied experience in Horwich workshops. In the latter year he was

appointed Foreman Fitter at Mirfield, but afterwards decided to acquire wider experience in the United States, where he served with the Pennsylvania and Delaware, Lackawanna & Western Railroads until 1912. Returning to his old line, Mr. Crossley was appointed Locomotive Foreman at Bank Hall (Liverpool), and remained there after the amalgamation and until 1929. In that year he was promoted to be District Locomotive Superintendent at Abergavenny, a post he held until August,



**Mr. E. Crossley,**

Appointed District Locomotive Superintendent, Edge Hill, L.M.S.R.

1934, when, owing to pooling, he was appointed Assistant District Locomotive Superintendent at Rugby and Bletchley, prior to his taking over charge of the Edge Hill District on January 1 last. Mr. Crossley took honours at both Bootle and Liverpool Technical Schools.

Mr. H. Jackson, Deputy Chief Mechanical Engineer, N.W.R., India, has been granted 16 months' leave preparatory to retirement, as from October 12.

Mr. Alexander Muirhead, late Chairman and Managing Director of the South Indian Railway, whose death we announced in our issue of July 19, left estate of £57,992 (£54,453 net).

We regret to record the death, on October 23, of Sir John Pybus, Bt., C.B.E., M.P., M.I.E.E., Minister of Transport 1931-33, in the National Government, and Vice-President of the B.E.A.M.A.

At a meeting of the Railway Companies' Goods Managers' Conference held on October 17, Mr. A. Maynard, Goods Manager, G.W.R., was unanimously elected Chairman of the Conference for the year 1936.



## 67 m.p.h. on the 3 ft. 6 in. Gauge

A notable locomotive trial on the South African Railways

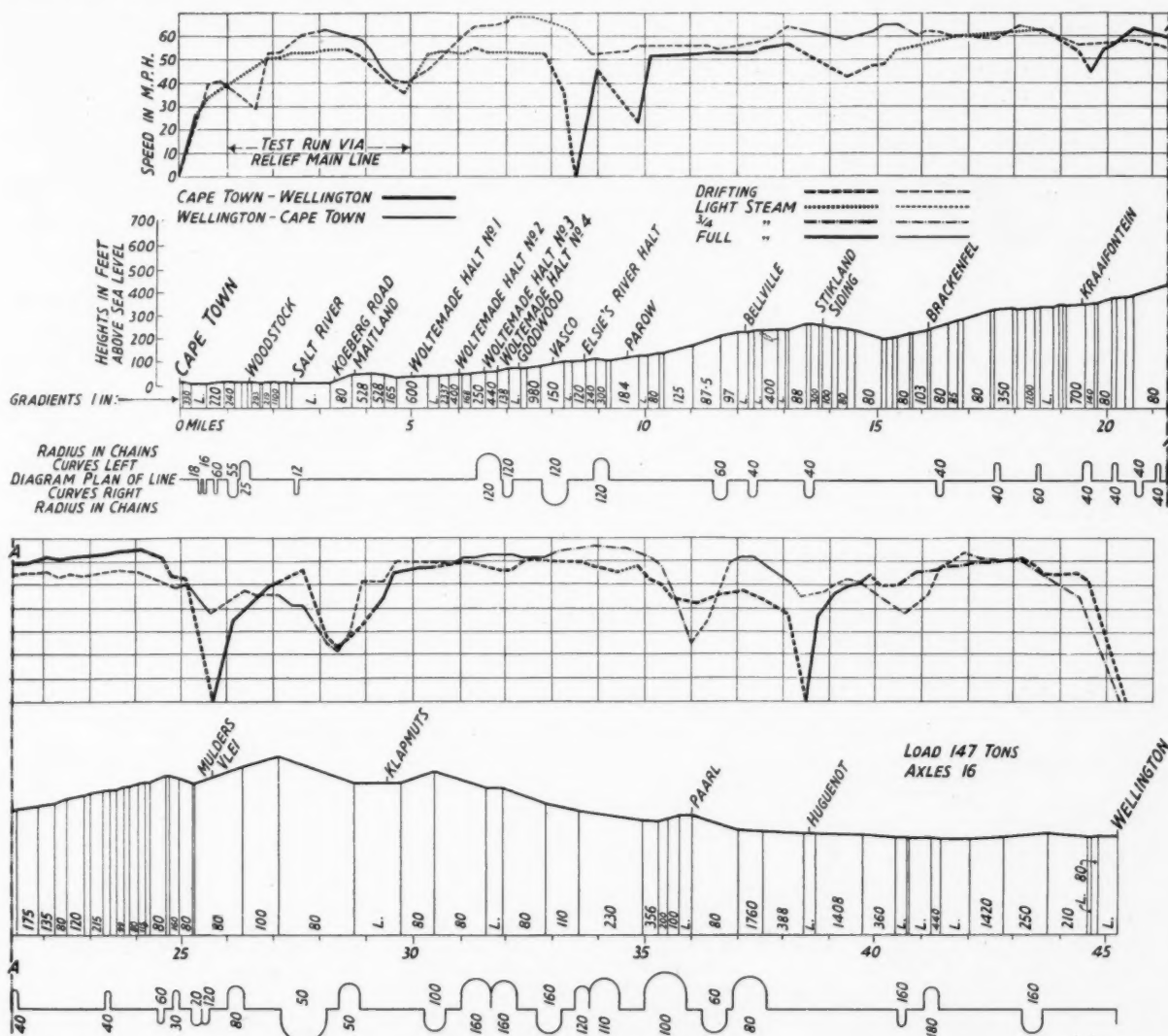
(See illustration on page 678 and editorial note on page 662)

With the object of observing the behaviour on the 3 ft. 6 in. gauge at comparatively high speeds of the new 19C 4-8-2 locomotives of the South African Railways, built recently by the North British Locomotive Company, and described in THE RAILWAY GAZETTE of November 16, 1934, a remarkable test was carried out recently, resulting in a cut of the fastest existing schedule over the 45.3 miles from Wellington to Cape Town from 73 min. to 54 min. 2 sec., or 50½ min. net. The cylinders of these locomotives are 21 in. dia. x 26 in. stroke; driving wheels are 4 ft. 6 in. diameter; the heating surface totals 1,830 sq. ft. and the superheating

surface 390 sq. ft.; the weight of engine in working order is 79½ tons, and at 85 per cent. of the working pressure of 200 lb. per sq. in. the tractive effort is 36,300 lb. Features of the design, as compared with earlier standard locomotives of the S.A.R., are R.C. poppet-valve motion, improved balancing, and a redesigned front end. The load consisted of three of the latest first class main line saloons and a brake, totalling 131 tons behind the tender. These coaches are fitted with a new type of bogie, with special springing arrangements to minimise rolling, and with the wearing surfaces of the bogie centre casting immersed in an oil-bath, so

giving exceptionally easy turning on curves and reducing wear to a minimum.

The section over which the test was made is very heavily graded, and some of the uphill speeds recorded are probably without precedent over gradients of such severity. On the outward journey, after reducing speed to 45 m.p.h. through Kraaifontein, the 6.3 miles to Mulders Vlei Junction were covered at an average of 52.8 m.p.h. in 7 min. 10 sec., notwithstanding the fact that 2½ miles of this distance are up at 1 in 80, over 1½ miles at 1 in 100 to 1 in 175, and the remainder on easier grades. On the longest 1 in 80 stretch—nearly one mile—the speed fell merely from 63 to 59 m.p.h., and once speed had been attained after recovery from Kraaifontein slack, it continued steadily up the bank at between 59 and 65½ m.p.h. From the stop at Mulders Vlei, the engine accelerated to 22



South African Railways test run with 19C 4-8-2 locomotive between Cape Town and Wellington. Gradient, curve, and speed diagrams

m.p.h. up the 1 in 80 in the first  $\frac{1}{4}$ -mile, and continued up equal lengths of 1 in 80 and 1 in 100 to reach 49 m.p.h. in  $\frac{1}{4}$  miles from the start. From the third stop, at Huguenot, there was an acceleration to 55 m.p.h. in  $\frac{1}{4}$  miles of level or very slightly falling track. The whole journey of 45.4 miles was completed in 67 min. 28 sec., inclusive of three out-of-course intermediate stops which totalled 6 min. 32 sec., six other signal delays, and a permanent way restriction between mileposts 27 $\frac{1}{2}$  and 29. The net time that would have been observed apart from delays is calculated at 54 min. The distance includes 8 miles in all at grades mostly 1 in 80, but up to and including 1 in 100, adverse to the engine, and much further upward inclination on less severe grades.

On the return journey fewer delays were experienced. The first stage, from Wellington to Huguenot, is practically level; 45 $\frac{1}{2}$  m.p.h. was attained within the first mile, and 60 m.p.h. within 2 $\frac{1}{4}$  miles, the maximum attained being 63 $\frac{1}{2}$  m.p.h. Then came signal checks at Daljosaphat and Huguenot, the former to 38, and the latter to 45 m.p.h., followed by the Paarl service slack to 25 m.p.h. From Paarl there is  $\frac{1}{4}$ -mile falling at 1 in 100-200; in  $\frac{1}{4}$ -mile speed rose from 25 to 58 $\frac{1}{2}$  m.p.h., and from there up 1 in 230 to 66 $\frac{1}{2}$  m.p.h. two miles further on; thenceforward the speed continued without intermission at or above 60 m.p.h. for 6 miles, of which 4 $\frac{1}{2}$  miles mount continuously at 1 in 230, 1 in 110, and 1 in 80. On the first mile at 1 in 80,

speed kept steadily at 61-63 m.p.h., and on the second stretch,  $\frac{1}{4}$  miles long, it fell from 62 to a steady 60 m.p.h.; the former mile was completed in 57.9 sec., and the final mile of the latter stretch in 59.5 sec. The remarkable time of 6 min. 29 sec. was thus achieved over the 6.6 miles from Paarl, passed at 25 m.p.h., up this bank to Klappmuts, after which came a 21 m.p.h. reduction for the permanent way slack between mileposts 29 and 27 $\frac{1}{2}$ . In a mile of 1 in 80 up, following the slack, speed rose to 45 m.p.h.

The rest of the journey in this direction is mostly in favour of the engine, and calls for no special comment; the maximum speed attained, with eight-coupled 4 ft. 6 in. driving wheels, was 67 $\frac{1}{2}$  m.p.h. at Goodwood, on practically level track. For 50 per cent. of the southbound run the engine was drifting with steam shut off. Allowing for several out-of-course slacks, the net time for the 45.3 miles from Wellington to Cape Town was about 50 $\frac{1}{2}$  min. representing a start-to-stop average of 54 m.p.h.

## EXPERIMENTAL RUN: WELLINGTON-CAPE TOWN

Engine: 4-8-2 No. 2463, Class 19C.

Load: 4 coaches = 131 tons.

Distance			Times	Average speeds	Notes
Miles			min. sec.	m.p.h.	
0.0	WELLINGTON	dep.	0 00	—	—
6.8	Huguenot	pass	8 37	46.3	Two signal checks.
9.3	PAARL	...	12 00	46.3	Service slack (25 m.p.h.).
15.9	Klappmuts	...	18 29	61.1	P.w.r. check (22 m.p.h.).
19.5	Mulders Vlei	...	24 24	36.6	Service slack (38 m.p.h.).
25.8	Kraaifontein	...	31 28	53.5	—
33.1	BELLVILLE	...	38 48	60.0	—
35.5	Parow	...	41 23	55.5	—
36.5	Elsie's River Halt	...	42 30	54.5	—
37.1	Vasco	...	43 03	66.0	—
37.8	Goodwood	...	43 39	67.0	—
38.7	Woltemade Halt No. 3	...	44 31	63.0	—
40.2	Woltemade Halt No. 1	...	46 21	48.5	Service slack (40 m.p.h.).
44.4	Bay Junction	...	49 51	50.6	—
45.3	CAPE TOWN	arr.	54 02	—	Signal check outside.

The fastest ordinary service (No. 52 express) is allowed, from passing Wellington, 14 min. to Paarl, 26 min. to Klappmuts, 41 min. to Kraaifontein, 52 min. to Bellville, 63 min. to Woltemade Halt No. 1, and 73 min. to Cape Town. We are indebted for these particulars to Mr. C. E. Arnold, Hon. Secretary of the Railway Circle of South Africa.

## G.W.R. Ambulance Work, 1934-5

The report of ambulance work on the Great Western Railway for the twelve months from July 1, 1934, to June 30, 1935, indicates satisfactory progress in all phases of the movement. The number of successful students has increased from 7,206 in the previous year to 7,391 and an encouraging feature in the figures is the fact that no fewer than 657 of these members are recruits to the movement, an increase of 142 over 1933-4. The Athlone Bowl, the all-line trophy awarded to the division gaining the highest percentage of first-aid recruits, has been won by the Exeter Division with a percentage of 12.93, the Plymouth Division being close runners-up with 12.92, testimony to the healthy state of the movement in the West of England. This is the first year, since the award of the trophy in 1927, that it has passed out of the possession of either the London A. or Swindon Divisions, which have wrested it from each other in past years.

Progress was also displayed in the competition field, the number of competing teams in the divisional contests being 304 (118 in the advanced class and 186 in the beginners' class). The challenge trophies, and prizes awarded by the directors in each of the seven-

teen divisions, were presented by the respective officers subsequent to the competitions. At the final competition, held at Paddington on May 3, the Directors' Challenge Shield was awarded to Small Heath, and the Carvell Cup to Fishguard Harbour, as runners-up. These trophies, together with directors' prizes for the four first teams, were presented by Sir Robert Horne, Chairman of the company.

The Small Heath and Fishguard Harbour teams represented the Great Western Railway at the Inter-railway competition at the Wharnclyffe Rooms on May 24. The Great Western Railway was again successful in winning the "Harry Webb" Cup, the Welsh inter-railway trophy, at the competition held at Cardiff on November 2, 1934, the Barry team gaining first place.

The company's Chief Medical Officer commented most favourably on the high standard of work displayed in the reports of actual first aid rendered during the year, and the gold, silver and bronze medals and special certificates awarded by the directors in selected cases were presented on the occasion of the final competition. The number of efficiency medals awarded

to members of the staff during the past year was 398, and these include 242 gold medals for 15 years' efficiency, 93 gold bars for 20 years, 49 quarter century medals, and 14 gold bars for 30 years' efficiency. Since the institution of the efficiency award in 1921, the following awards have been issued, making a total of 3,115:—

15 year gold medals	...	1,822
20 " " bars	...	888
25 " " medals	...	329
30 " " bars	...	76

It is understood that several of the company's trained ambulance men have now 35 years' ambulance efficiency to their credit, and a further award, 35-year bar, has been recently instituted.

That the good work of the staff is appreciated is shewn by the fact that during the past year one member has been promoted from Serving Brother to the rank of Officer in the Order of St. John, nine others have been elected as Serving Brothers, and the Vellum Vote of Thanks of the Order has been awarded in two other cases. These honours have followed recommendations of the Great Western Railway Central Ambulance Committee. In addition, one of the company's divisional officers has been elected an Officer and three others as Serving Brothers of the Order.

## Maintaining a London Suburban District

Addressing a joint meeting of the L.N.E.R. (London) Lecture and Debating Society and the Permanent Way Institution (London) on October 18, Mr. T. H. Seaton, District Engineer, Stratford, L.N.E.R., spoke on the above subject, with particular reference to the Stratford District, which embraces the suburban area of the former Great Eastern Railway together with the City depots east of Farringdon Street of the former Great Northern Railway. It includes over 400 track miles of running line, 144 stations and depots, including Liverpool Street and Fenchurch Street terminals, 1,688 bridges, over 500,000 sq. yd. of roadways, and on the Thames a floating pier 300 ft. long, two dry docks, and riverside wharves 3,760 ft. in length. The total staff approaches 2,000.

Liverpool Street station on a normal weekday is used by over 200,000 persons. Each 24 hours 1,260 trains pass in and out, and there is an all-night service to certain areas. At Fenchurch Street a total of 400 trains serve 40,000 persons daily.

For ease of supervision and organisation the District Engineer's Department is divided into four sections: Technical, Clerical, Permanent Way, and Works respectively, each of which has a head who reports direct to the District Engineer. The keynote of the whole organisation is personal responsibility which, of course, involves careful delegation of authority.

The Technical section is responsible for the preparation of schemes and estimates and supervises contracts and new works carried out under the District Engineer. It also reports from the technical aspect on a wide variety of subjects. There are three subsections of the Clerical section, viz. (1) Correspondence and Works, (2) Accounts and Staff, (3) Stores and Materials. The first handles correspondence, records the progress of works, compiles the returns for the information of headquarters and issues orders for routine and special work in such a way as to enable a mechanised accounting system to be brought into operation.

The second section is responsible for the staff paybills and the appropriation of expenditure. The compilation of the paybills is now done by mechanical appliances and was described in *THE RAILWAY GAZETTE* of October 6, 1933. A modified form of paybill is used and is compiled by girl operators with the aid of Burroughs machines. This system has resulted in appreciable economies of staff, and the compilation of 150 separate paybills, covering 2,000 men, is completed in the brief time of six hours a week. The arrangements enable the men to book their actual time up to the completion of their normal rostered hour each Saturday, and thus in normal circumstances prac-

tically no estimated time has to be included in the paybills. Mechanical means are also used for the allocation of wages and materials to the various expenditure headings and works orders.

The third section, Stores and Materials, is responsible for the supply of necessary materials and also for the disposal of surplus and scrap material. Every effort is made to dispose of scrap material where it lies, and the co-operation of the traffic staff in this connection has resulted in appreciable savings by minimising double handling.

The Permanent Way Section is in charge of a Chief Inspector with an Assistant and seven District Inspectors. The whole line is divided into lengths, each in charge of a ganger, the strength of which is determined by taking certain units of maintenance work and attaching a man-power value. Adjustments are made in accordance with special local circumstances. The work of the maintenance gangs naturally varies considerably, but it is organised on the broad principle of ensuring that work is carried out in the proper sequence, especially seasonal work. By means of the Hallade recorder the condition of the track is periodically noted and special attention given to any defects that may be revealed. The District Engineer himself examines the whole district on foot in the course of the year. Classes for permanent way men are held during the winter months and contribute to the proper maintenance of the high standard now called for with increasing train speeds and loads. Whilst practical experience is the first essential for the filling of supervisory positions, some technical knowledge is an advantage, and members of the permanent way staff who show promise may take a course of special training which includes a period in the drawing office and finishes with an insight into the administrative work of the Chief Permanent Way Inspector. Periodical meetings between the District Engineer and the Inspectors are held.

### Relaying

£60,000 is the average annual cost of the relaying of the district and the programme is carefully compiled and submitted for approval to headquarters after the District Engineer has visited each section concerned. The programme sent forward gives a wealth of information as to the age and character of the track, and the District Engineer's personal notes as to its general condition. Relaying is carried out by special gangs controlled directly by the Chief Inspector. Owing to the dense traffic on certain sections the only time available for relaying is six or seven hours early on Sunday morning. Most point and crossing work is assembled on a layout ground before being transported to the site,

where it is laid in with the aid of steam cranes, which are first used to load up the old material so as to clear the site. The organisation is now such that it is possible with 55 men and two cranes to relay completely a double junction in the six or seven hours available on Sunday morning.

Special accounting methods are used in connection with the relaying programme, enabling unit costs to be arrived at and each job to be completely analysed.

Special steel is used for switches and crossings where the traffic is heaviest, and although this is expensive in first cost, it is economical in the long run owing to prolonged life. The building up of worn crossings by welding is also practised, and both the electric and oxy-acetylene processes are used. On sharp curves the outer rail is lubricated by means of oil boxes. Rail creep is minimised by the fitting of rail anchors.

The District Permanent Way Depot is at Leyton, and here the layout ground already referred to is situated, as well as the main permanent way stores. For emergency purposes a quarter-mile of complete track is always kept on hand as well as a stock of timber, stores and tools. The organisation is designed to ensure that suitable men and material are readily available to deal with any emergency.

The Works Section has a staff of some 600 men and is responsible for the maintenance of buildings and structures; also the daily cleaning of those of the company's main offices situated within the district. It has four component parts, dealing with (1) the London stations and depots; (2) outlying stations and depots, slips, drainage, bridges, &c.; (3) metal structures and mechanical plant; and (4) the various engineers' shops of the Stratford Depot. Under (3) considerable economies have been effected by the introduction of mechanical appliances, such as portable compressors and electric welding sets. The fourth section has charge of the plant used on the district, and is responsible for maintaining this in good condition and for controlling its movements to and from the various jobs. In the works section, as in the permanent way section, educational facilities are provided for the men, and a scheme of apprenticeship is in force.

The maintenance expenditure of the District Engineer's Department is at present some £260,000 per annum. Careful estimates are prepared at the beginning of each year and graphical records of the main items of expenditure are kept.

During Mr. Seaton's tenure of the office of District Engineer there has been a steady drop in the expenditure, due principally to the use of mechanical appliances, the employment of seasonal staff and the reorganisation of the working of the district.

Mr. Seaton's paper was illustrated by lantern slides and diagrams.



## Commercial Air Transport

There was a large attendance at the opening meeting of the 1935/36 session of the G.W.R. Lecture and Debating Society at Paddington station on October 17, when, under the chairmanship of Sir James Milne, C.S.I., General Manager, an illustrated lecture on "Commercial Air Transport" was given by Mr. G. O. Waters, Commercial Assistant, Railway Air Services.

The speaker said it was as yet too soon to express an opinion as to the final position that air transport would take up in relation to older methods of communication, but it was certain that air transport had come to stay. Dealing with the difference between commercial air transport and flying in general, he said the purpose of constructing an air liner was to provide conveyance of revenue-earning passengers and goods from point to point with the utmost safety and reliability. Air liner pilots were steady, experienced men, selected with these objectives in view. There was small scope in commercial aviation for the more spectacular methods of flying, but he thought the dangers associated with record and stunt flying, and the exploits of our air fighting forces, had had the effect of casting some reflection on the safety of flying in general. In illustration of the safety of commercial air services, Mr. Waters mentioned that on the routes of Imperial Airways and Railway Air Services passengers could purchase insurance cover for £1,000 for a premium of 1s., precisely the same rate as was applicable to British railways.

He then gave a brief illustrated survey of the early history of aviation up to the war, the requirements of which event gave a great impetus to the production and improvement of aeroplanes. The first British air line was inaugurated in 1919, being operated between Hounslow and Paris by a company known as Aircraft Transport and Travel Limited. During the following five years a number of services, mostly using converted wartime aircraft, were initiated by British enterprise. The increasing difficulty of British air services competing successfully with foreign subsidised competition led to the setting up of a Government committee, the outcome of which was the formation, in March, 1924, of a State-assisted company, Imperial Airways Limited.

Three essentials for creating public confidence in any transport service were reliability, punctuality, and comfort. Large and powerful machines, multi-engined, and with ample and luxurious passenger accommodation, provided a means of achieving all three requirements. The planes used on European services had accommodation for 38 passengers and a crew of four. On Empire routes fewer passengers were accommodated in order to give more space to mails. In 1919, the passenger fare from London to Paris was twenty

guineas; today a passenger could fly between those cities, in the utmost luxury, for £4 15s.

On the subject of internal air lines, the speaker said that Railway Air Services Limited was formed in March, 1934, by the four group railway companies and Imperial Airways. Powers to operate air services were obtained by the railway companies in 1929, and four years later the Great Western Railway began to operate a service from Cardiff to Plymouth, via Torquay, which was later extended to Birmingham. Railway Air Services operated air lines for and on behalf of the respective

railway companies over whose territory the routes passed. So far Railway Air Services had flown half-a-million miles, with a regularity of about 98 per cent.

The cost of operating an air service in this country was as yet extremely high in comparison with the possible revenue. A very considerable cost was for petrol, which had to be purchased at standard rates although the tax revenue went largely to the Road Fund. This, said the speaker, was an unfair burden on the air operator.

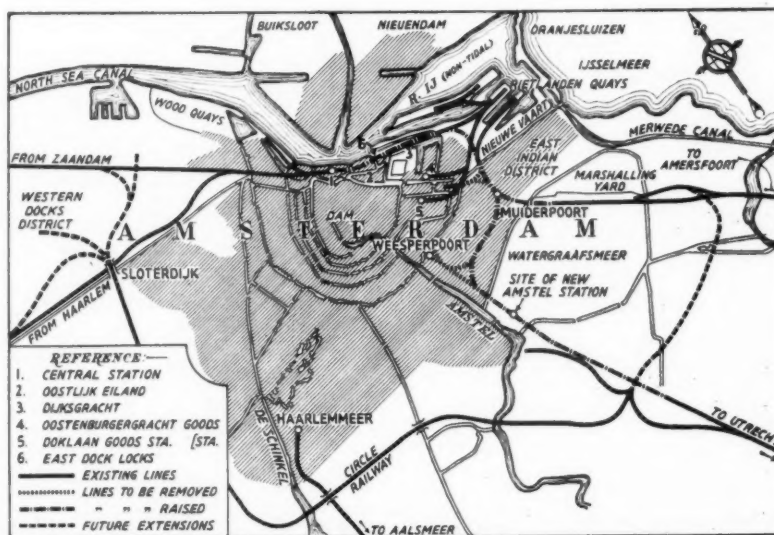
Mr. Waters took the view that, given a definite policy and proper provision of ground facilities, the ordered development of commercial flying in this country was assured.

## Improvements in Amsterdam

Important works are being undertaken by the Netherlands Railways on the east side of Amsterdam where the lines from Amersfoort and Utrecht converge. The first named carries the main line traffic to the north and the suburban traffic to the Gooi district, while over the other run the main line services to the south. They connect at the Muiderpoort station and are continued thence as a double line with numerous level crossings, constituting a growing nuisance for railway and vehicular traffic alike, to the Central station. The necessity of improving matters was recognised over thirty years ago, when a commission was appointed to look into it, but its efforts remained unavailing, as did the negotiations with the railway management in 1916.

Ten years later the subject was again opened and an agreement reached between the numerous authorities concerned in 1933. The scheme, indicated on the accompanying sketch map, comprises the elimination of the

crossings and an increase in track capacity by raising the lines from a point to the east of the present Muiderpoort station and continuing them as two double tracks to the Central station. The Weesperpoort station, now the terminus of the Utrecht line, is to be abolished and replaced by one to be called Amstel, also to the south. The embankment near the Central station is, of course, to be enlarged. Certain shunting yards are to be closed and the working concentrated in a large one at Watergraafsmeer, and the running sheds at Rietlanden, where the shunting yard will be enlarged. A new goods yard is planned at Nieuwe Vaart. The storage sidings east of the Central station are to be extended. Work has already begun on the new Muiderpoort station, and the scheme is expected to be completed in 1940. The total estimated cost amounts to 28 million florin, of which 9 million will be found by the city of Amsterdam, 9 by the Treasury and 10 by the Netherlands Railways.



## Annual Dinner of the Institution of Mechanical Engineers

H.R.H. the Duke of Gloucester, K.G., was the guest of honour at the annual dinner of the Institution of Mechanical Engineers, held on Friday last, October 18, at the Connaught Rooms. In giving the toast of "The Members of the Royal Family," the president, Colonel A. E. Davidson, D.S.O., A.D.C., assured him of the best wishes of all present for his long life and happiness. In his reply, the Duke of Gloucester thanked the president for his good wishes, and said that he would always remember the occasion as being the last official function at which he was present as a bachelor. He then proposed the toast of "The Institution of Mechanical Engineers," though he remarked that as a cavalry officer he did not like the sound of the word "mechanical." Yet he knew, he said, that the life of the whole country today depended on the maintenance of the high standard of mechanical engineering, and that that depended on the existence of such a body as the institution. He wondered whether in the first instance the growth of mechanical engineering was responsible for the foundation of the institution, or whether the institution was responsible for altering all previous ideas of living. However that might be, the unique reputation of British mechanical engineering throughout the world was the institution's justification and reward. In referring to the president, Colonel Davidson, he remarked that he was the only serving officer (with one possible exception many years ago) who had ever been elected president of a body of this character.

Colonel Davidson, responding to the toast, said that as engineers they were grateful for the splendid work done by the members of the Royal Family in visiting the Dominions and Colonies, and they were aware of the good results achieved by the recent visit of His Royal Highness to Australia. He then referred to the trials on the Glossop-Ashopton road of the first caterpillar designed for gun traction, of which a photograph was printed inside the cover of the menu card. These took place on the King's accession day in 1910, and if the development of the machine had been encouraged, tanks and British gun tractors might have been provided at a much earlier stage of the war. He went on to speak of the engineering achievements of this Jubilee Year, and congratulated Mr. H. N. Gresley on his Silver Jubilee train which had reached a speed of 112 m.p.h. on the L.N.E.R. He asked why we should not commemorate such achievements on our postage stamps in the same way as other nations. The President then proposed the toast of "Our Guests."

The Rt. Hon. the Earl of Athlone, K.G. (Chancellor of the University of

London), replying on behalf of the guests, spoke of the common educational tasks of the institution and the university, and in particular urged upon engineering firms the desirability of providing increased facilities for the practical training of engineering students.

Mr. Asa Binns then proposed the toast of "Engineering and Empire," and compared the size and structure of the British Empire with that of ancient Rome. The Romans were great engin-

eers, but their means of communication and transport were terribly slow. The British pioneers of mechanical power, Watt, Stephenson, and others had begun the marvellous transformation of modern life, which had enabled us to give railways, roads, harbours and magnificent cities to our Dominions and Colonies. The Rt. Hon. Lord Stonehaven, G.C.M.G., D.S.O., LL.D., J.P., D.L. (President of the Institution of Naval Architects) replied to the toast, and said that no one who had travelled about the Empire could fail to recognise that engineers were themselves the best ambassadors of empire, and the best links between communities which owed allegiance to the King.

## Railway Exhibits at Brussels

(From a correspondent)

Steam, electric, petrol, and diesel motive power units and passenger and goods rolling stock all find a place in the central hall of the Grand Palace at the Brussels International Exhibition. On the steam side the most striking exhibit is the new four-cylinder simple Belgian Pacific locomotive<sup>1</sup> built by a consortium of Belgian locomotive manufacturers. This machine, which is characterised by an axleload of 24 tonnes, is shown without its tender, but like all the steam locomotive exhibits, the footplate is open to inspection. Apart from a model of one of the old Atlantic engines of the National Railways, and a full-size model of the first Belgian-built locomotive, *La Belge*, the Belgian steam interest is completed by the Franco articulated locomotive,<sup>2</sup> a unit which, along with the French State Railways' three-cylinder Mountain locomotive No. 241,101,<sup>3</sup> (also in the hall), seems destined for an exhibition career. The French steam exhibits comprise the Etat Mountain, one of the successful 2-8-2 suburban tank engines of the Nord, with Cossart valve gear,<sup>4</sup> and one of the P.L.M. 2-10-2 compound goods engines with all four cylinders outside.<sup>5</sup>

Electric traction is well represented by one of the four-car trains of the Brussels-Antwerp line,<sup>6</sup> and by three powerful electric locomotives, one a 4,000 h.p. express 2-Do-2 unit from the Paris-Orleans Railway,<sup>7</sup> and the other two representing the latest Italian 3,000-volt d.c. practice for express passenger and heavy goods traffic, classes E.428 and E.626 respectively.<sup>8</sup> Two electric motor-coaches of the Belgian Vicinaux are shown, and also one or two trolley-buses.

Railcar traction forms the main part of the railway show. There is a single example of steam propulsion, viz., a Sentinel-type double-bogie vehicle with

two 125 h.p. engines built by the Ateliers Metallurgiques de Nivelles. Petrol traction, although outnumbered by diesel examples, shows up well with a single Bugatti car of the Etat type,<sup>9</sup> a 56-seater pneumatic-tyred Michelin, a Breda semi-streamlined express parcels railcar, and one of the 240 b.h.p. Fiat Littorina vehicles with a buffet, as used on the Riviera-Sestrieries service.<sup>10</sup>

The largest diesel exhibit is a 500 b.h.p. two-car articulated Renault unit as used on the French State Railways between Paris and Caen.<sup>11</sup> Other models from the same company's range are a 265 b.h.p. double-bogie car<sup>12</sup> and a 100 b.h.p. four-wheeler.<sup>13</sup> Further French cars on view are one of the Aciéries du Nord double-bogie units built for the Nord, and a standard 210 b.h.p. double-engined De Dietrich car.<sup>14</sup> Italian items comprise one of the Breda 260 b.h.p. fast double-bogie railcars with A.E.C.-type engines, Wilson epicyclic gearboxes, and Vulcan-Sinclair fluid couplings<sup>15</sup>; and a Fiat diesel Littorina with two 150 b.h.p. engines.<sup>16</sup> Finally, there is one diesel locomotive exhibit—an 80 b.h.p. shunter with a Deutsche-Werke Kiel engine built by the Ateliers de Construction Mécanique de Tirlemont. There is a model of the Danish State Railways' three-car streamlined Lyntog unit built by Frichs, and in the Danish Pavilion Frichs show a range of their railcar engines.

A sleeping car of the International Sleeping Car Company's most modern type, and weighing 57.8 tonnes, has been awarded an Exhibition Grand Prix, and no less noteworthy in layout and construction is a very fine second class *wagon-salon*, with separate arm-chairs, exhibited by the Swedish State Railways along with a first, second, and third class sleeper, which has been used since 1931 on the Stockholm-Lapland

<sup>1</sup> THE RAILWAY GAZETTE, April 5, 1935.

<sup>2</sup> THE RAILWAY GAZETTE, December 2, 1932.

<sup>3</sup> THE RAILWAY GAZETTE, January 6, 1933.

<sup>4</sup> THE RAILWAY GAZETTE, March 17, 1933.

<sup>5</sup> THE RAILWAY GAZETTE, July 29, 1932.

<sup>6</sup> Electric Supplement, April 5, 1935.

<sup>7</sup> Electric Supplement, November 17, 1933.

<sup>8</sup> Electric Supplement, June 29, 1934.

<sup>9</sup> THE RAILWAY GAZETTE, May 26, 1933.

<sup>10</sup> THE RAILWAY GAZETTE, January 18, 1935.

<sup>11</sup> Diesel Supplement, October 5, 1934.

<sup>12</sup> Diesel Supplement, May 17, 1935.

<sup>13</sup> Diesel Supplement, May 19, 1933.

<sup>14</sup> Diesel Supplement, October 5, 1934.

<sup>15</sup> Diesel Supplement, March 22, 1935.

<sup>16</sup> Diesel Supplement, June 14, 1935.

service. Belgian rolling stock on view comprises a 41-tonne postal car and an assortment of second and third class bogie carriages. One of the new double-deck carriages as used on the Etat suburban services is also to be seen, and it bears a note to the effect that 50 cars of this type carry 63,000 passengers a day in Paris. The passenger section is completed by an all-steel third class suburban car belonging to the Nord, but the rolling stock and railcar exhibits give a fine index as to the extent to which Timken and S.K.F. roller-bearing axleboxes are used in modern practice, nearly all the

vehicles being fitted with bearings of one or other of these two types. The International Sleeping Car exhibit and the Nord suburban car have Isothermos boxes. Goods rolling stock includes a Swedish refrigerator car and one or two Italian wagons. Interesting general exhibits include an example of the device used at Milan to keep the points from freezing; an automatic colour-light signalling model showing the controlled movement of three vehicles, exhibited by the French railways; an elaborate system of inductive automatic train control shown in conjunction with splitting distant signals, which are re-

peated in the cab of one of the latest Italian State Railways electric locomotives; a dummy cab containing a working arrangement of the Bianchi dead-man handle system, which can be worked by visitors; and a Willem-Coder oil-engined road-rail tractor.

In the French pavilion there is a working model of automatic signalling on the Paris Metro, in which the points at the terminals are automatically worked. In the British pavilion the British railways have a joint exhibit devoted mainly to setting forth the facilities offered by the railway system of this country.

### L.N.E.R. Accountant's Recreative Society

The fifty-fourth annual dinner of the London & North Eastern Railway Accountant's Department Recreative Society was held at the Hamilton Hall, Abercorn Rooms, Liverpool Street, on Friday, October 18, Mr. C. H. Newton, Chief Accountant, presiding. There was an attendance of 140, and among those present were:—

Messrs. I. Buchanan Pritchard, G. F. Thurston, J. McLaren, C. J. Selway, J. Ryan, A. P. Ross, A. Howie, R. G. Davidson, A. E. Moore, E. Taylor, G. Morton, C. A. Everard Greene, A. J. Trott, J. A. Kay, A. Feirn, F. J. Orchin, W. M. Hind, G. N. Rhodes, R. Brown, H. S. Alsop, C. E. Taylor, J. Inglis, and L. C. Glenister.

Mr. Buchanan Pritchard, who proposed the toast of the "Accountant's Department Recreative Society," assured those present that the subject was a serious one, but his subsequent remarks soon proved that his thoughts were in a lighter vein. Mr. Pritchard discussed the kind of recreation he imagined an accountant, whose life was spent amongst awe-inspiring abstracts, would take, and the pastimes he suggested were much appreciated. Mr. G. Stedham, who replied on behalf of the society, spoke of the success which always attended the functions arranged under their auspices.

Mr. C. H. Newton proposed the toast of "Our Guests." Referring to certain of his guests individually, Mr. Newton said that in spite of the subtle remarks made by Mr. Buchanan Pritchard earlier in the evening, his friendship was very greatly valued. Of Mr. G. F. Thurston, he remarked that no L.N.E.R. staff function was complete without the presence of one who gave up so much of his time in that direction.

Mr. A. Howie, whose name was coupled with the above toast, thanked the chairman for the invitation extended to himself and the other guests, and said he was glad of the fact that although the L.N.E.R. prided itself on being on the drier side of Britain, it was not necessary for the society to go north of Berwick to obtain the moisture necessary for the annual dinner.

Mr. G. F. Thurston, who proposed the toast of "The President," said:—

"It is over 19 years since Mr. Newton came to a constituent company of our group and we are still very proud of him, and I can assure you it means much to have at the head of so important a department a man of such outstanding ability, and there is ample evidence that the staff is actuated by and tries to emulate his splendid example."

Mr. Newton, in his reply, thanked Mr. Thurston for the very kindly refer-

ence he had made, and expressed his deep appreciation of the cordial manner in which the toast had been received. He felt it was very gratifying to know that the Accountant's Department was so well received by other departments, to whom they always wished to be helpful. This could not be achieved without the co-operation of all the staff, for whose loyalty he once again took this opportunity to express his great sense of indebtedness.

The speeches were interspersed with a musical programme arranged by Mr. Bernard Barker.

### Argentine Transport Co-ordination Bills

(From our correspondent in Buenos Aires)

After protracted delays extending over some three years and several postponements by Congress, the Bill for the co-ordination of the national transport services was approved by a fairly large majority, which practically represented the strength of the allied Government forces against the Opposition. It was down for debate at the same sitting at which an important political measure was also on the agenda, this being the postponement of the forthcoming elections for the partial renewal of the Chamber of Deputies. To oppose the latter Bill, the Government managed to muster a sufficient number of its supporters to pass the Transport Co-ordination Bill, whether the Opposition kept their seats or not, and it was only when the latter parties realised that the Government could count on a quorum that they took part in the debate. This was, of course, cut short by the majority forcing a division almost immediately and rushing through several measures in which they were interested, including that relating to the co-ordination of transport, which was passed by 67 votes to 40. On the following night, after another stormy session, the Bill passed the second reading in the Chamber of Deputies, and now awaits consideration by the Senate, where, however, it is not expected to encounter any very serious opposition. The Bill, in principle, has been passed by the Deputies more or less in the form out-

lined in THE RAILWAY GAZETTE of September 6, although some of the details of the measure have been modified to make it more acceptable to the Deputies and also to facilitate working.

On the same night, the second Transport Co-ordination Bill, also referred to in THE RAILWAY GAZETTE of September 6, relating to the street passenger services in the City of Buenos Aires, was discussed, and passed the first reading of the Chamber of Deputies, despite the obstructive tactics of the Socialists, who showed their opposition to the measure by eventually withdrawing from the Chamber. By way of protest against the passing of the Bill, the owners and drivers of the "colectivos" and "micro-omnibuses" declared a 48-hour strike and withdrew these vehicles from the streets, to the great advantage of traffic generally, as well as the safety of pedestrians, as was shown by a decrease in the number of street accidents, for which the reckless driving of these vehicles is to a great extent responsible.

"THE CALCULUS OF PLenty."—The eleventh annual Norman Lockyer Lecture (British Science Guild) will be given by Sir Josiah Stamp, who has chosen as his subject "The Calculus of Plenty." The lecture will take place in the Goldsmiths' Hall on Wednesday, November 13 next, at 4.30 p.m.



## MINISTRY OF TRANSPORT ACCIDENT REPORT

### Minster-on-Sea, Southern Railway: April 26, 1935

The public road level crossing adjacent to this station is, under the Sheppey Light Railway Order, 1898, not provided with gates. At four crossings on the branch, gates were called for, and two other crossings have since been similarly equipped. At four of the seven stations the platform duties are performed by a single porter, and at the other three there is no staff. Minster-on-Sea is one of the former class. At the manned stations where there are gates, the porter attends to them, but when the men are off duty, and at those stations where there is no staff, the gates, which normally stand across the line, are opened for the train to pass, and then again closed, by a member of the train crew. As will be explained, the porter at Minster used to signal trains over the crossing, but at the time of the accident he was off duty.

At 7.10 on the evening in question, as a passenger train was going over the crossing, at slow speed, a motor-car collided with the engine. While the engine and train sustained no damage, the car was swung round parallel with the railway and had its offside completely wrecked. One of the passengers in the car was killed. A factor in the case was a hedge by the side of the road which obstructed the view of the railway. Another factor was that the driver of the car said that whilst she had never seen a train at this crossing, it was generally known that there was a man with a flag there when a train was expected. In consequence she was not on the look-out for a train but devoted her attention to the road ahead.

The work of the branch is supervised by the Queenborough stationmaster, W. A. Rose, who thought that the practice was instituted 20 years ago, or more, and said he had not realised that the drivers of road vehicles might be misled by the presence of a flagman at times and by his absence at others. The senior officers of the company said that prior to the inquest they were unaware of the practice of flagging trains over this crossing, and that they had been unable to trace that it had ever been authorised from headquarters, or to ascertain why it had been instituted. Information on this point was given by a driver, who had been working over the line for 30 years. He stated that, so far as he could recollect, it had been customary for down trains to be flagged over the crossing, when the porter was on duty, during the whole of that period. At one time, he added, the service included several through trains, not stopping at Minster-on-Sea, and he believed that the practice of flagging was introduced on account of the poor view of road traffic obtainable by the drivers of such trains, when running in the down direction.

Colonel Woodhouse, who inquired into the accident, is of the opinion that the system whereby road users received a warning of the approach of a train which they cannot easily see for themselves until close to the crossing, during certain hours of the day, and none at other times, is clearly indefensible, and he looked upon it as the main cause of the accident. He cannot entirely absolve the Queenborough stationmaster from responsibility in this connection; while it is true that the practice was instituted many years before the control of the branch came under his charge, it is to be regretted that he did not realise the risks inherent in it.

The alteration which has taken place in the character of road traffic throughout the country since the majority of the existing 199 ungated public road level crossings were constructed, chiefly over lines built under Light Railway Orders, has undoubtedly increased the risks attendant upon their use. At one time the traffic over them was not only mainly slow moving, but also largely of a local nature, and so the position of such crossings was known to the majority of those using them. Under modern conditions there is a greater element of risk in the use of such crossings by the motor vehicle driver who is a stranger to the locality, unless steps are taken to render them as conspicuous as possible, and unless the view of approaching trains is good.

For these reasons there is much to be said for the practice, adopted at some such crossings, of supplementing the advanced warning notices by an indication of the precise spot where the railway intersects the road by painting the fences at the crossing in such a way as to attract the attention of the vehicle driver. It is, however, far more important to provide a good view of the line from the road, in both directions, and in this connection the use of hedges to fence the road near the crossing is not entirely satisfactory, as the necessity for keeping them well trimmed is apt to be overlooked, especially when they are not the property of the railway company; an open fence—wire, or post and rail—kept clear of undergrowth, is far more satisfactory in this respect.

At the crossing with which this report is concerned, however, conditions are exceptional, in that the long-established system of flagging trains over it, though during certain hours only, makes it necessary to consider what protection should be extended to the local users of it, as well as to strangers and occasional visitors to the district. In normal circumstances Colonel Woodhouse would have considered that gates at it were unnecessary, and that it could be rendered safe by the erection of adequate warning signs, supplemented by white painted fences at

the actual intersection of rail and road, and by severe trimming of the hedge north of the line—or its replacement by an open fence—to improve the view. In this connection the Colonel has learnt that since the accident the Kent County Council has erected a standard "ungated crossing" road sign on the north side of the railway, at a distance of 100 yd. from it. He was also informed during the inquiry that it might prove difficult to obtain the consent of the owner of the hedge to have it trimmed to the necessary extent, as it serves to shield a number of young fruit trees from the prevailing wind, though this has now been done.

But the fact that a flagman is usually present at the crossing is undoubtedly known, not only to local residents, but also to many summer visitors and others, who visit Sheppey only occasionally. If it were decided to discontinue the practice of flagging trains over the crossing, it would be possible to bring this to the notice only of local residents, and others who have seen the flagman there in the past might be given a false sense of security by his absence. Moreover, even under the existing arrangements, the safety of the crossing is increased when the flagman is there, and Colonel Woodhouse is accordingly reluctant to recommend that he should be withdrawn.

Therefore, having regard to all the circumstances, he is of opinion that either the crossing should be flagged for the passage of all down trains, or that equivalent measures for the safety of road traffic should be taken. If the first alternative is impracticable, owing to the work at Minster-on-Sea station being insufficient to warrant the employment of a porter there during the whole period that the train service is running, he recommends that gates, closing alternately across road and rail, and kept normally in the latter position, should be erected at the crossing. These can be operated by the porter when he is on duty, and by a member of the train crew when he is absent, as at other crossings on the line which are similarly equipped. The provision of gates will render unnecessary the periodical trimming of the hedges north and south of the line, and the painting of the fences at the crossing, which would otherwise be needed.

### Allied British Airways Limited.—

At an extraordinary general meeting of the shareholders of Hillmans Airways Limited, held in London on October 10, ratification was given to an agreement to combine with United Airways Limited, Northern and Scottish Airways Limited, Spartan Air Lines Limited, and Highland Airways Limited, in the formation of Allied British Airways Limited. The company is to use the new airport at Gatwick. Particulars of the amalgamation were given on page 551 of THE RAILWAY GAZETTE for October 4.

## NOTES AND NEWS

**Closure of French Local Lines.**—The Council-General of the Department of Linistère, in Brittany, has decided to close the narrow-gauge departmental railway and replace the services by road buses to be run by private owners working under licence from the Council.

**Southern Railway Rating Appeal.**—In connection with the consolidated appeals of the Railway Assessment Authority and certain local authorities against the decision of the Railway & Canal Commission on the valuation for rating of the Southern Railway, the House of Lords has, on the petition of the Westminster City Council, extended until November 28 the time for lodging the printed cases and appendix and for setting down the cause for hearing.

**Welsh Wagon Merger.**—Circulars issued to the shareholders of the Cambrian Wagon Co. Ltd. and the Welsh Wagon Works Limited, which are in voluntary liquidation, state that the two companies are being liquidated and a new company will be formed under the title of Cambrian Wagon Works. This company will purchase the assets and undertake liabilities of the existing companies. The share capitals of the two companies are largely in common ownership, and the merger will facilitate operations.

**Road Accidents.**—The Ministry of Transport return for the week ended October 19, of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents	Injured
England	118 (137)	3,758 (3,926)
Wales	3 (7)	161 (137)
Scotland	20 (9)	328 (381)
	141 (153)	4,247 (4,444)

The total fatalities for the previous week were 129, as compared with 131 for the corresponding period of last year.

**Ceremony with L.M.S.R. Locomotive at Northampton.**—Lady Knox, wife of Lieut. General Sir Harry Knox, K.C.B., D.S.O., Colonel-in-Chief of the Regiment, unveiled plaques of the regimental crest fixed to the nameplates of the L.M.S. "Royal Scot" class locomotive No. 6147, *The Northamptonshire Regiment*, at a ceremony at Northampton (Castle) station, on Thursday, October 17. The plaques were accepted on behalf of the L.M.S.R. by Mr. E. J. H. Lemon (Vice-President), who was supported by Mr. G. H. Loftus Allen (Advertising and Publicity Officer), Mr. H. Hauxwell (District Goods and Passenger Manager, Northampton) and other officials. In addition to a regimental party and band from Northampton, detachments of the regiment travelled from Aldershot, Peterborough, and Huntingdon to attend the ceremony, at which the Mayor of Northampton (Alderman

A. Burrows) and a distinguished company from the town and county were present.

**P.L.M. Streamlined Steam Train.**—The P.L.M. experimental streamlined steam train (illustrated in our issue of April 12 last) has recently had a restaurant car added to its formation, which now consists of an Atlantic type locomotive and four cars. It has been taking its turn in the fast Paris-Lyons Bugatti service. The distance of 318 miles is scheduled to be covered in 289 minutes, including two intermediate stops totalling three minutes.

**Railway Convalescent Homes: Family Dinner.**—The family dinner of the Railway Convalescent Homes will be held in the Wharnccliffe Rooms, Hotel Great Central, on Saturday evening, November 9. The President, the Rt. Hon. Sir Robert Horne, G.B.E., K.C., M.P., had arranged to take the chair, but we learn that in view of the impending general election, he will be unable to do so, and that Lord Palmer has kindly agreed to preside.

**New Post Office Station, L.P.T.B.**—Work begins this week on the new Post Office station on the Central London Line, L.P.T.B. It will be situated beneath the junction of Newgate Street, Cheapside, and St. Martin-le-Grand, and will have two entrances from the street giving access by stairs to a low-level booking hall. Three escalators will be provided to reach the platforms. The present Post Office station will be closed when the new works are completed.

**Mechanical or Electrical Interlocking in Locking Frames.**—The programme for the opening meeting, on October 9, of the winter session of the Institution of Railway Signal Engineers had to be altered as the intended paper was not available. The meeting, therefore, devoted itself to a discussion on the above subject, which was initiated by Mr. T. D. Richards. The President (Mr. H. E. Morgan) was in the chair, and the subsequent speakers included Messrs. A. Moss, R. Dell, C. Carslake, H. H. Dyer, T. Austin, L. H. Peter, W. H. Hayles, T. S. Lascelles, H. M. Proud, A. G. Rickett, L. J. Boucher, B. F. Wagenrieder, P. Lomas, R. S. Griffiths, W. S. Roberts, and the President.

**Railway Wages Claim.**—Representatives of the four group railway companies met representatives of the National Union of Railwaymen, the Associated Society of Locomotive Engineers and Firemen, and the Railway Clerks' Association in London, on Tuesday, October 22, for the purpose of hearing applications made by the trade unions for discontinuance of the percentage deductions from earnings operating under the agreement of August, 10, 1934, and variation of certain conditions

of service as determined by National Wages Board Decision No. 119, of March 5, 1931. The trade union representatives explained the grounds of their claims, and the railway companies' representatives undertook to examine the position. A further meeting will be held on November 26.

**Southern Railway Trafalgar Day Exhibit.**—On Trafalgar Day (October 21), the Southern Railway exhibited the 4-6-0 locomotive *Lord Nelson* and a train of representative rolling stock at Portsmouth and Southsea station. The train was composed of the latest main-line passenger coaches, and various types of containers were also displayed. A fee of 2d. was charged for entry to the platform. In 1933 a similar Trafalgar Day exhibition was held at Portsmouth for the first time, and proved very successful. It was not repeated last year owing to October 21 falling on a Sunday. The Lord Mayor of Portsmouth opened the exhibition in 1933, and last Monday.

**Russia and Roumania Through Traffic.**—Through railway traffic between the U.S.S.R. and Roumania began on Friday last, October 18, the railway bridge over the Dniester, which forms the boundary between the two countries, having now been completed. This bridge, which links Tighina in Bessarabia with Tiraspol in Soviet Russia, was partly destroyed in 1919. Both standard (4 ft. 8½ in.) and Russian (5 ft.) gauge lines have been laid between these points. A Soviet delegation left Moscow on the previous day for Tiraspol to take part in the celebrations to commemorate the opening of this, the first and only physical link between the two countries, which is one of the sequels to the recent pact of non-aggression between Russia and Roumania.

**Improved Czechoslovak Freights.**—A considerable improvement in goods traffic was registered on the Czechoslovak Railways in September. That country is celebrating on Monday next (October 28) the 17th anniversary of its establishment as an independent republic, and the national rejoicings arranged for that day appear to have the support of increasing trade. The total number of car loadings in September was 418,094, compared with 385,106 in September, 1934, and with 403,000 in August, 1935. Car loadings for export trade showed a decline from 30,700 to 27,396, but those for internal traffic increased from 354,410 to 390,698. Car loadings of coal registered an improvement from 99,390 to 102,373. For the first nine months of the current year total car loadings amount to 3,213,000, as against 3,122,000 in the corresponding period of 1934, and 2,887,000 in 1933. The figure per working day in September was 17,420, compared with 16,046 in September, 1934, and 15,376 for that month in 1933. There has thus been a steady increase for the past two years.

## British and Irish Traffic Returns

GREAT BRITAIN	Totals for 42nd Week			Totals to Date		
	1935	1934	Inc. or Dec.	1935	1934	Inc. or Dec.
L.M.S.R. (6,925½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	432,000	434,000	- 2,000	20,867,000	20,480,000	+ 387,000
Merchandise, &c. ...	502,000	486,000	+ 16,000	18,775,000	18,642,000	+ 133,000
Coal and coke ...	237,000	223,000	+ 14,000	9,482,000	9,430,000	+ 52,000
Goods-train traffic ...	739,000	709,000	+ 30,000	28,257,000	28,072,000	+ 185,000
Total receipts ...	1,171,000	1,143,000	+ 28,000	49,124,000	48,552,000	+ 572,000
L.N.E.R. (6,336 mls.)						
Passenger-train traffic...	287,000	286,000	+ 1,000	13,581,000	13,287,000	+ 294,000
Merchandise, &c. ...	351,000	355,000	- 4,000	12,967,000	13,043,000	- 76,000
Coal and coke ...	237,000	224,000	+ 13,000	9,241,000	9,455,000	- 214,000
Goods-train traffic ...	588,000	579,000	+ 9,000	22,498,000	22,498,000	- 290,000
Total receipts ...	875,000	865,000	+ 10,000	35,789,000	35,785,000	+ 4,000
G.W.R. (3,749½ mls.)						
Passenger-train traffic...	178,000	184,000	- 6,000	8,841,000	8,701,000	+ 140,000
Merchandise, &c. ...	204,000	191,000	+ 13,000	7,584,000	7,526,000	+ 58,000
Coal and coke ...	100,000	97,000	+ 3,000	4,082,000	4,169,000	- 77,000
Goods-train traffic ...	304,000	288,000	+ 16,000	11,676,000	11,695,000	- 19,000
Total receipts ...	482,000	472,000	+ 10,000	20,517,000	20,396,000	+ 121,000
S.R. (2,171 mls.)						
Passenger-train traffic...	265,000	254,000	+ 11,000	12,903,000	12,547,000	+ 356,000
Merchandise, &c. ...	69,500	69,500	-	2,564,000	2,719,000	- 155,000
Coal and coke ...	31,500	28,500	+ 3,000	1,230,000	1,277,000	- 47,000
Goods-train traffic ...	101,000	98,000	+ 3,000	3,794,000	3,996,000	- 202,000
Total receipts ...	366,000	352,000	+ 14,000	16,697,000	16,543,000	+ 154,000
Liverpool Overhead ...	1,090	1,131	- 41	49,907	48,162	+ 1,745
Mersey (4½ mls.) ...	4,141	4,088	+ 53	168,757	171,081	- 2,324
* London Passenger Transport Board ...	554,300	543,500	+ 10,800	8,675,500	8,555,800	+ 119,700
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,848	1,933	- 85	110,689	109,552	+ 1,137
" " goods	698	585	+ 113	21,167	21,583	- 416
" " total	2,546	2,518	+ 28	131,856	131,135	+ 721
Great Northern pass. (543 mls.)	8,700	9,000	- 300	455,550	432,850	+ 22,700
" " goods	11,150	9,800	+ 1,350	387,150	364,700	+ 22,450
" " total	19,850	18,800	+ 1,050	842,700	797,550	+ 45,150
Great Southern pass. (2,124 mls.)	19,782	19,571	+ 211	1,063,080	1,035,698	+ 27,382
" " goods	41,754	38,909	+ 2,845	1,452,188	1,363,548	+ 88,640
" " total	61,536	58,480	+ 3,056	2,515,268	2,399,246	+ 116,022

\* 16th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

## Exports of Railway Material from the U.K. in Sept.

	Nine Months Ending			
	Sept., 1935	Sept., 1934	Sept., 1935	Sept., 1934
Locomotives, rail .. .. .	£ 59,253	£ 14,408	£ 527,404	£ 209,027
Carriages and wagons .. .. .	89,307	154,773	875,883	638,767
Rails, steel .. .. .	92,719	110,849	656,629	817,250
Wheels, sleepers, fishplates and miscellaneous materials .. .. .	172,735	161,299	1,420,784	875,065

Locomotive and rail exports included the following:—

	Locomotives		Rails	
	Sept., 1935	Sept., 1934	Sept., 1935	Sept., 1934
Argentina .. .. .	—	—	£ 5,642	£ 6,466
Union of South Africa .. .. .	—	—	61,214	37,098
British India .. .. .	27,584	—	62,882	46,139

## Forthcoming Meetings

- Oct. 29 (Tues.).—Buenos Ayres & Pacific Railway Co. Ltd. (Ordinary General), Winchester House, Old Broad Street, E.C., at 11 a.m.
- Oct. 29 (Tues.).—Taital Railway Co. Ltd. (Annual General), River Plate House, E.C., at 2.30 p.m.
- Oct. 30 (Wed.).—Buenos Ayres Great Southern Railway Co. Ltd. (Ordinary General), River Plate House, Finsbury Circus, E.C., at 12 noon.

- Oct. 30 (Wed.).—South Indian Railway Co. Ltd. (Annual), 91, Petty France, Westminster, S.W.1, at 12 noon.
- Nov. 5 (Tues.).—Arica & Tacna Railway Co. Ltd. (Ordinary General), Dashwood House, E.C.2, at 12 noon.
- Nov. 6 (Wed.).—Buenos Ayres Western Railway Limited (Ordinary General), River Plate House, E.C., at 12 noon.
- Nov. 30 (Sat.).—Buenos Aires Central Railroad and Terminal Company (Annual), Corrientes, 4002, Buenos Aires, at 11 a.m.

## British and Irish Railways Stocks and Shares

Stocks	Highest 1934	Lowest 1934	Prices	
			Oct. 23, 1935	Rise/ Fall
G.W.R.				
Cons. Ord. ...	66½	48½	45½	+½
5% Con. Prefce. ...	118	109	111½	—
5% Red. Pref. (1950) ...	115	107	108½	—
4% Deb. ...	117	105	111	+½
4½% Deb. ...	119	109	112½	—
4½% Deb. ...	129½	115½	119½	—
5% Deb. ...	135	126½	132½	—
2½% Deb. ...	75	64	71	+½
5% Rt. Charge ...	1347½	123½	129½	—
5% Cons. Guar. ...	132½	121½	126½	+1
L.M.S.R.				
Ord. ...	30½	19½	18	+½
4% Prefce. (1923) ...	64½	41	50	—
4% Prefce. ...	87	69½	79	+½
5% Red. Pref. (1955) ...	107	92½	100½	+1
4% Deb. ...	114½	100½	105	+1
5% Red. Deb. (1952) ...	118½	111½	112½*	-2
4% Guar. ...	106½	96½	100	-½
L.N.E.R.				
5% Pref. Ord. ...	24½	13½	9½	+½
Def. Ord. ...	11½	67½	5½	+½
4% First Prefce. ...	76	59½	52	+½
4% Second Prefce. ...	47	25½	19½	—
5% Red. Pref. (1955) ...	94½	80	73½	+1
4% First Guar. ...	104	92	95½	—
4% Second Guar. ...	97½	86½	85	—
3% Deb. ...	90	74½	77½	—
4% Deb. ...	114	99½	103	+1
5% Red. Deb. (1947) ...	117	108	109½	—
4½% Sinking Fund Red. Deb. ...	111½	105½	109	—
SOUTHERN				
Pref. Ord. ...	90	63½	77	+2
Def. Ord. ...	32½	19	19½	+1
5% Prefce. ...	118½	107½	112½	—
5% Red. Pref. (1964) ...	115½	107½	110½	+1
5% Guar. Prefce. ...	132	120½	125½	+1
5% Red. Guar. Pref. (1957) ...	119½	113	113½	—
4% Deb. ...	116½	103½	110	+½
5% Deb. ...	134	124½	131½	—
4% Red. Deb. ...	113½	105½	110½	—
1962-67				
BELFAST & C.D.				
Ord. ...	6	5	8½	—
FORTH BRIDGE				
4% Deb. ...	110	100	105½	—
4% Guar. ...	110	100	104½	—
G. NORTHERN (IRELAND)				
Ord. ...	9½	41½	16½	—
G. SOUTHERN (IRELAND)				
Ord. ...	25	12½	40½	—
Prefce. ...	21½	13½	42	+1
Guar. ...	48	39	79½	—
Deb. ...	67	59	79½	—
L.P.T.B.				
4½% "A" ...	126	115	120½	—
5% "A" ...	135½	124½	130½	—
4½% "T.F.A." ...	113½	107½	109	—
5% "B" ...	131½	118	125½	—
"C" ...	97	73	99	—
MERSEY				
Ord. ...	15½	7	11	—
4% Perp. Deb. ...	93½	82½	94½	—
3% Perp. Deb. ...	66½	61½	70½	—
3% Perp. Prefce. ...	54	44½	52½	—

\* ex dividend



## CONTRACTS AND TENDERS

G. R. Turner & Co. Ltd. has received an order from the Nyasaland Railways for steel bodywork and details required for the conversion of 38 bogie low-sided wagons to covered wagons.

The Clyde Engineering Co. Ltd. has received an order from the Tasmanian Government Railways for one Q class goods locomotive. The placing of an order for a second locomotive has been held over pending decisions regarding the building of locomotives at the Launceston shops of the railway administration.

The Tasmanian Government is considering the expenditure of approximately £17,500 on new plant and equipment at the Launceston shops and, as above noted, the question of building locomotives there is under consideration.

The Associated Equipment Co. Ltd. has recently received orders from railway-associated road transport operators as follow: City of Oxford Motor Services Limited, 12 oil-engined Regents and six oil-engined Regals; Halifax Corporation Joint Committee, three oil-engined Regals; and Pickfords Limited, six oil-engined Matador goods vehicles.

The Quasi Arc Co. Ltd. has received an order for one diesel-engine-driven portable welding plant for the Central Argentine Railway.

The Bengal-Nagpur Railway Administration has placed orders with Robert Stephenson & Co. Ltd. for a quantity of steel firebox plates, with Caprotti Valve Gears Limited for cylinders for Caprotti valve geared-locomotives, and with the Vulcan Foundry Co. Ltd., for locomotive wheels and axles.

Ritchie Bros. Limited has received an order from the New South Wales Government Railways for the construction of 12 trailer cars for use with diesel railcars. The total price is stated to be approximately £34,500 and the order comprises four first, and four second, class cars and four second class buffet cars of an average weight of about 16 tons. The first diesel train set will be made up of a power car, three trailers and a baggage car, all having air conditioning equipment.

Leyland Motors Limited has received the following orders from railway and railway-associated road transport operators: London Passenger Transport Board, three Cub goods vehicles; East Kent Road Car Co. Ltd., 20 Titan passenger vehicles, including 10 fitted with oil engines and torque converters and two Tigers; Hants & Dorset Motor Services Limited, three Titan passenger vehicles fitted with torque converters, and 10 Tiger passenger vehicles; Northern General Transport Co. Ltd., one oil-engined Titan with torque converter; North Western Road Car Co. Ltd., 12 oil-engined Tiger passenger vehicles and six Cub passenger vehicles; Crosville Motor Services Limited, seven Tigers.

Hadfields Limited has received an order from the South African Government Railways and Harbours Board for a diamond crossing (order No. B6379, price £557).

The South Indian Railway Administration is inquiring for tenders receivable at 91, Petty France, Westminster, S.W.1, by November 6 for pressed steel sleepers for broad and metre gauges. Drawings are obtainable of Messrs. Robert White & Partners, 3, Victoria Street, S.W.1.

Chas. Brand & Co. Ltd. has received the contract from the London Passenger Transport Board for works involved in the enlargement and modernisation of Post Office station, Central London Line. The station is to be located further eastward, at the junction of Cheapside, St. Martins le Grand, and Newgate Street, with entrances from the north and south side of Cheapside connecting up to a large central booking hall.

The New Zealand Government Railways Board has placed orders with Dorman Long & Co. Ltd. for steelwork for bridges to a total value of approximately £5,000, and with British (Guest, Keen, Baldwins) Iron & Steel Co. Ltd., the South Durham Steel & Iron Company, the Cargo Fleet Iron Co. Ltd., and the Consett Iron Co. Ltd. for chequered steel plates for carriage flooring to a total value of approximately £5,200.

The Indian Stores Department has placed the following orders to the values given:—

General Engineering Supply & Utility Company: 2,000 cast steel axleboxes (Rs. 23,500, c.i.f. Karachi).  
Indian Cable Co. Ltd.: 126 miles Copper-Weld wire (Rs. 34,398, free delivery).  
Tatanagar Foundry Company: 50,000 m.s. tie-bars for sleepers (Rs. 68,229 l.o.r. Tatanagar).  
Hooghly Dock & Engineering Co. Ltd.: 50,000 m.s. tie-bars for sleepers (Rs. 67,188, l.o.r. Howrah).  
Imperial Chemical Industries (India) Limited and Martin & Company: Rate contracts for fog signals.  
Chloride Electrical Storage Co. Ltd.: Battery cells (Rs. 10,091 free delivery).  
Balmor Lawrie & Co. Ltd.: Batterycells (Rs. 14,079, free delivery).

### F.B.I. Mission to Poland

For some time past the Federation of British Industries has been giving consideration to the possibility of organising a mission to Poland during the autumn, to follow up and take full advantage of the benefits offered to this country by the Anglo-Polish Agreement signed on February 27. Since the signature of the agreement there have been indications of increasing business between the two countries, but it has been felt, states an F.B.I. announcement, that a combined manifestation of the interest of United Kingdom industry in the Polish market in the form of a mission, together with the closer and more personal relations which its individual members would form with their Polish customers, would be likely to result in fuller use of the advantages of the agreement and of the goodwill existing in Poland towards the United Kingdom.

Assurance has been received of the active co-operation of economic circles and chambers of commerce in Poland,

and arrangements have been completed for the despatch of a mission which, it is expected, will leave for Warsaw on November 2. Representatives of Birmingham and Sheffield trades and the motor industry have expressed their intention of participating. The interests of the federation as a whole will be represented by Mr. Charles Ramsden, the federation's Foreign Manager, who will be in general charge of the mission, which has the full support and co-operation of the Department of Overseas Trade. It is anticipated that it will be accompanied by Mr. D. H. Lyal, M.B.E., one of the department's officers who went with the previous mission to Poland.

## Forthcoming Events

- Oct. 5–Nov. 5.—Exhibition of "The World in Miniature," at Lyons, France.
- Oct. 25 (Fri.).—Institute of Transport (Leeds Graduate), at Church Inst., Albion Place, 7 p.m. "Air Transport," by Mr. E. Tyler.
- Institute of Transport (Manchester–Liverpool), at Liverpool, 6.30 p.m. "Some Legal Aspects of the Road and Rail Traffic Act," by Mr. M. R. Fletcher Rogers.
- Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. Presidential Address by Col. A. E. Davidson.
- Institution of Railway Signal Engineers, at Criterion Restaurant, Piccadilly Circus, London, W.1., 6.30 for 7 p.m. Annual Dinner.
- Southern Railway Pupils and Premium Apprentices' Association, at Charing Cross Hotel, London, W.C.2, 7.15 for 7.30 p.m. Annual Dinner.
- Oct. 26 (Sat.).—Permanent Way Institution (Leeds), at Central Y.M.C.A., Station Road, Doncaster, 3.30 p.m. Joint Meeting with Sheffield Section. "Measured Shovel Packing," by Mr. G. F. Kent.
- Oct. 28 (Mon.).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "Norway Cruising," by Mr. C. Jones.
- Institution of Mechanical Engineers (Graduates), Storey's Gate, London, S.W.1, 6.45 p.m. "Heat Transmission and Fluid Friction," by Mr. W. H. Darlington.
- Railway Students' Association (Edinburgh), at Goid Hall, St. Andrew Square, 8 p.m. "Function of Estate Department," by Mr. A. Watson.
- Oct. 30 (Wed.).—Diesel Engine Users' Association, at Caxton Hall, Caxton Street, London, S.W.1, 3 p.m. Informal Discussion: "Fuels for Diesel Engines."
- G.W.R. Centenary Celebrations Banquet, at Grosvenor House, Park Lane, London, W.1, 7.30 for 8 p.m.
- Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. Brancker Memorial Lecture. "Air Transport in Great Britain—Some Problems and Needs," by Lt.-Col. F. C. Sheldrake, C.I.E., O.B.E.
- L.N.E.R. (Darlington) Lecture and Debating Society, at North Road Inst., 7.30 p.m. "Docks Machinery," by Mr. P. Liddell.
- Oct. 31 (Thurs.).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. "The Trader's View in Regard to Transport by Rail and Road," by Mr. J. J. Hughes.
- Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "Locomotive Wheels, Tyres and Axles," by Mr. F. S. Cox.
- Nov. 1 (Fri.).—Institute of Transport (Nottingham Graduate), at Guildhall, 7 p.m. Paper by Mr. J. L. Gunn.
- Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. "Strength of Metals under Combined Alternating Stresses," by Messrs. H. J. Gough and H. V. Pollard.

## LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.  
LOCAL GOVERNMENT ACT, 1929.  
ELEVENTH SCHEDULE.

1935 REVIEW OF THE OPERATION OF THE  
RAILWAY FREIGHT REBATES SCHEME  
AND  
APPLICATION IN RESPECT OF  
ADMINISTRATIVE EXPENSES.

NOTICE IS HEREBY GIVEN that the Railway Rates Tribunal will sit at 10.30 a.m. on Monday, the 18th November, 1935, in Court "A," Judges' Quadrangle, Royal Courts of Justice, London, W.C.2, to review the operation of the Railway Freight Rebates Scheme for the year ending 30th September, 1935, pursuant to the provisions of Part I of the Eleventh Schedule to the Local Government Act, 1929.

NOTICE IS ALSO GIVEN that the Railway Companies to which the said Scheme applies have filed with the Tribunal an Application (1935 No. 322) pursuant to the provisions of sub-paragraph 1 (a) of paragraph 5 of the said Part I of the Eleventh Schedule that in respect of the year 1st October, 1935, to 30th September, 1936, the sum to be paid out of the general monies of the Railway Freight Rebates Fund in respect of administrative expenses shall be increased from one-half of one per cent. to such other percentage of the aggregate of the estimated relief of the said Companies in that year as will yield a sum amounting to approximately £43,000; which Application will also be heard at the above-mentioned time and place.

NOTICE IS FURTHER GIVEN that Accounts and Statements relative to such Review have been lodged with the Tribunal. Such Accounts and Statements and the aforesaid Application may be inspected at the Office of the Registrar, Bush House, Aldwych, London, W.C.2, at any time during office hours. Copies of the said Accounts and Statements may be obtained (price 2s. 6d. post free), on prepayment, from the Secretary, the Railway Clearing House, Euston Square, London, N.W.1.

Any Railway Company to which the said Scheme applies or Representative Body of Traders interested, which may be desirous of being heard before the Tribunal on the Review must file a Notice of such desire, and any person desiring to object to the aforesaid Application must file a separate Notice of Objection at the Office of the Registrar, Bush House, Aldwych, London, W.C.2, on or before Friday, the 8th day of November, 1935.

Such Notices must be on foolscap size paper and must state concisely the Submission (if any) which is desired to be made, and in the case of an Objection, the nature and grounds thereof. A Notice by a Representative Body of Traders must in addition contain a statement of the facts upon which such Body claims to represent a substantial number of persons interested in any or all of the selected traffic.

Each Notice filed must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar, Railway Rates Tribunal, when a stamp will be affixed at the office. Five additional copies of each Notice must be lodged with the original at the office of the Registrar.

Dated this 23rd day of October, 1935.

T. J. D. ATKINSON,

Registrar.

## Rio Tinto Company Limited.

NOTICE IS HEREBY GIVEN that the Share Transfer Books of the Company will be closed from Thursday, the 24th, to Thursday, the 31st October, both days inclusive, for the preparation of the Half-yearly Dividend on the Preference Shares, which will be paid on the 1st November.

Holders of Share Warrants to Bearer are informed that they will receive payment of the said Half-yearly Dividend on Preference Shares at the rate of Two Shillings and Sixpence per Share, less Income Tax, on and after Friday, the 1st November, 1935, on presentation of Preference Share Coupon No. 77, either at the Company's Office in London or at the Société Générale, 29, Boulevard Haussmann, Paris.

Coupons for payment in London must be left four clear days previously for examination, and may be deposited forthwith.

By Order.

R. H. BEECHER,

Secretary.

Offices of the Company:  
11, Old Jewry, E.C.2.  
22nd October, 1935.

## Great Southern Railways Company.

CONTRACTS, 1936.

THE Directors of the Great Southern Railways Company are prepared to receive Tenders for the supply of the undermentioned Stores for Six and Twelve Months commencing 1st January, 1936:—

No. of Form.	No. of Form.
Ambulance Sets and Refills .. 43	Leather and Leather Goods .. 12
Asbestos Sheet Jointing .. 47	Lamp Founts and Burners .. 18A
Asbestos Sheetting, Packing, &c. .. 40	Lead, Pig, Sheet and Pipe .. 161
Axles, Steel Crank for Locomotives .. 101	Locks .. 19
Baskets and Mats .. 10	Mantles, Gas .. 26C
Belting, Balata .. 44	Millboard Bases for Axleboxes .. 46
Belting, Train Lighting .. 44A	Nuts, Black and Bright .. 15A
Bolts and Nuts, Rivets, Coach Screws and Washers .. 15	Office Sundries (such as Ink, Pens, Pencils, Rubber Stamps, Typewriter Ribbons, Pins, Toilet Paper, &c.) .. S.1
Brass Fittings for Carriages .. 18	Pins, Gimp; Panel and Riddles .. 30B
Brass Fittings for Water .. 26A	Pipes, Sewer, Plaster of Paris, &c. .. 32
Brooms and Brushes .. 13	Piston Rods, Chrome steel .. 166
Canvas and Sacks .. 6	Pots, Porous, &c. .. 52
Canvas for Wagon Tarpaulins .. 6A	Rainwater Goods .. 25
Castings, Malleable .. 11	Ropes, Twine and Flax .. 4
Cement, Portland .. 34	Screws and Split Pins .. 14
Cloth, Tapestry, for Carriages .. 7C	Shovels, Spades, &c. .. 21A
Clothing, Waterproof .. 9B	Soaps .. 3C
Coal Dust for Foundry Use .. 42A	Soft Goods, Linoleum, Carriage Rugs, &c. .. 7B
Colours, Dry, and in Oil .. 2A	Sponge Cloths, Mops and Wicks .. 5
Corks .. 39	Timber, Red Deals, DUBLIN .. 36
Crucibles and Plumbago .. 41	Timber, Flooring, DUBLIN .. 37A
Drysalteries .. 3	Timber, Deals and Flooring, CORK .. 38
Drawing Materials .. S.3	Timber, Deals and Flooring, LIMERICK .. 38A
Emery and Glass Cloths .. 28	Timber, Deals and Flooring, WATERFORD .. 38B
Envelopes .. S.2	Tyres, Steel for Carriages and Wagons .. 105
Felt, Roofing and Mastie .. 6B	Varnishes .. 1A
Foundry Requisites .. 42	Waste, Cotton .. 5A
Firebricks .. 33B	Washers, Steel Lock .. 50
Galvanized Roofing Buckets, &c. .. 23	Wire, Iron and Steel, and Fence Staples .. 30A
Grates, Stoves, &c. .. 24	
Glass Sheet and Plate .. 27A	
Glass Sundries .. 27B	
Glass Globes .. 51	
Hardware Brass and Iron .. 17	
Implements, Sundry .. 9A	
India Rubber Goods .. 21	
India Rubber Hose, Steam Heating .. 54	
Laces, Carriage .. 7A	
Leather Rings for Axlebox Dust Guards .. 45	

Forms of Tenders can be obtained on payment of 6d. each from the Stores Superintendent, General Stores Department, G.S. Railways, Inchicore, Dublin. Applications for forms by post must be accompanied by Postal Order. Stamps cannot be accepted. All enquiries for information should be directed to the Stores Superintendent.

Patterns may be inspected at the General Stores Department, Inchicore, on and after the 23rd instant, between the hours of 10.0 a.m. and 4.0 p.m. (except Saturdays).

Tenders must be enclosed in the envelope supplied for the purpose with each Schedule and must be posted so as to be with the undersigned before 5.0 p.m. on Wednesday, the 20th November, 1935.

The Directors will not consider any Tender unless it is furnished on the Company's Form, and do not bind themselves to accept the lowest or any Tender.

The decision of the Directors will be communicated not later than Friday, 10th January, 1936, to those Firms only whose Tenders are accepted.

By Order,

H. S. COE,

Secretary.

Kingsbridge Station,  
Dublin.  
October, 1935.

## Egyptian Government

APPOINTMENT OF A BOILER SHOP  
FOREMAN (INSPECTOR)

APPLICATIONS are invited for appointment of a Boiler Shop Foreman (Inspector) in the Mechanical Department of the Egyptian State Railways Administration. Applicants must be of British nationality between 30-40 years age, and possess the following qualifications:—

Must have served a regular apprenticeship with a Railway Company or firm of Locomotive Builders and have put in at least ten years in a recognised up-to-date Boiler Shop. Must be fully qualified to examine and report on the condition of boilers and have sufficient experience to supervise the repairs to be carried out as a result of his reports.

Must have had experience in the control of men. In addition to experience in Boiler Shop, experience in the Running Department of a Railway is desirable.

The salary offered is £E360 to £E480 per annum, according to qualifications, and is subject to deduction for Egyptian Stamp Duty according to the rules in force (£E1 = £S1 0s. 6d.).

Appointment will be on contract for three years commencing on the day of reporting for duty in Cairo.

The appointment is subject to medical examination in London and approval of the Authorities in Egypt.

The selected candidate will be granted a transfer allowance equal to one month's salary for change of residence from England to Egypt and vice versa.

Third class fares and reasonable out of pocket expenses will be paid to applicants who are requested to attend for interview and/or medical examination in London.

Application and specimen contract forms may be obtained from The Chief Inspecting Engineer, Egyptian Government, 41, Totterhill Street, London, S.W.1, to whom they should be returned, with full particulars as to education, qualifications, previous experience, personal reference and copies (not originals) of certificates or testimonials.

Envelope to be inscribed "Boiler Shop Foreman."

## The Chinese Government Purchasing Commission

THE Commission is prepared to receive Tenders from British manufacturers only for the supply of:—

(a) 100,000 STEEL SLEEPERS.

495,000 PINCH PLATES.

480,000 PINCH BOLTS AND NUTS.

60,000 FISHPLATES.

(b) 200 metric tons of DOGSPIKES.

Tender documents can be obtained at the office of the Consulting Engineers, Messrs. SANDBERG, 40, Grosvenor Gardens, London, S.W.1.

Non-returnable fees will be charged for each set of documents: (a) £1 10s.; (b) 15s.

## Railway and Other Reports

**Taital Railway.**—Payment is recommended of a balance dividend of 1s. a share, less tax, making, with the interim dividend, 2s. a share, less tax, for the year to June 30, 1935, equal to 2 per cent. per annum.

**Antofagasta (Chili) & Bolivia Railway.**—The directors have decided to pay, on account of arrears, a dividend of 2½ per cent. on the 5 per cent. cumulative preference stock. This will leave arrears from July, 1932. The payment will be made on December 2.

**Bengal - Nagpur Railway.**—The directors recommend a final dividend from reserve of ¼ per cent., payable on January 1, together with the guaranteed interest of 1½ per cent. then due, making a total distribution of 4 per cent. for the year ended March 31, the same as for the previous year.

## Railway Share Market

Despite the fact that activity in the stock and share markets usually declines prior to a General Election, most sections of the Stock Exchange have experienced rather more business this week. This is partly due to the more hopeful views as to the complicated international situation and the favourable reports which continue to come to hand from trade centres.

Home railway stocks benefited from the general tendency and also from the traffic receipts. Buying was based on hopes that the better tax showing of the latter will be continued and from the view that if there are to be considerable additions to the defence forces of the country more work will be provided for the iron, steel and heavy industries, which should assist traffic receipts of the railways as time proceeds. Southern issues

were active at higher prices, partly owing to hopes of a favourable rating decision. The preferred was bought on attention drawn to its apparently attractive yield. L.M.S. ordinary were better and fractional gains were established by the 4 per cent. preference and 4 per cent. 1923 preference, a favourable impression having been created by the traffic return. L.N.E. first and second preference were also better. Great Western were steady on growing confidence that the dividend is likely to be maintained. There was more attention given to prior charges and various of the debentures of home railways show a fractional gain on balance. London Transport stocks kept fairly steady, awaiting the report and accounts, which are to be issued at the end of the month.

The chief individual feature in the foreign railway market was a rise in Antofagasta ordinary and preference on the 2½ per cent. announced in respect of preference dividend arrears. The market had not expected the payment, which is the first since January, 1932. Nitrate Railway ordinary improved subsequently. There was a firmer tendency in Argentine stocks on the annual reports issued this week, which made a better impression than had been anticipated. B.A.G.S. ordinary and preference, B.A. Western, and Central Argentine gained a point or more early in the week, and B.A. Pacific were firmer. San Paulo ordinary remained depressed.

Canadian Pacific were active but failed to keep best prices, in common with the American railroad stocks dealt in on this side. Canadian Pacific preference were dull on fears that there will again be no dividend this year. Unlike the ordinary, they do not tend to respond readily to active New York market conditions.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1934-35	Week Ending	Traffic for Week			No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices				
				Total this year	Inc. or Dec. compared with 1934			Totals		Increase or Decrease		Highest 1934	Lowest 1934	Oct. 23, 1935	Yield % (See Note)	
								This Year	Last Year							
South & Central America.	Antofagasta (Chili) & Bolivia	830	20.10.35	£7,800	+	£3,190	42	£515,080	£600,820	-	£85,740	Ord. Stk.	265½	19	20	Nil
	Argentine North Eastern ..	753	19.10.35	7,673	+	157	16	133,967	126,035	+	7,932	"	11	67½	51½	Nil
	Argentine Transandine ..	174	Sept., 1935	5,000	-	200	39	55,300	54,350	+	950	A. Deb.	52	45	48	85½
	Bolivar .. .. .	2,806	19.10.35	77,380	+	10,303	16	1,164,437	1,110,049	+	54,388	6 p.c. Deb.	10	6½	10	Nil
	Brazil .. .. .	190	5.10.35	\$142,700	+	\$14,800	14	\$1,811,106	\$1,860,500	-	\$49,400	Bonds.	135½	107½	121½	4
	Buenos Ayres Central ..	5,085	19.10.35	116,745	+	6,727	16	1,904,132	1,935,780	-	31,648	Ord. Stk.	161½	81½	61½	Nil
	Buenos Ayres Gt. Southern	1,930	19.10.35	30,435	+	7,644	16	626,649	653,555	-	26,906	Mt. Deb.	23	10	16	Nil
	Buenos Ayres Western ..	3,700	19.10.35	108,311	+	988	16	1,890,655	1,970,284	-	79,629	Ord. Stk.	35	22	16	Nil
	Central Argentine .. .	273	19.10.35	8,503	-	13,262	16	134,329	281,278	-	146,949	"	27½	18½	13	Nil
	Do. .. .. .	311	19.10.35	1,176	-	471	16	21,317	23,721	-	2,404	Dfd.	14	7	5	Nil
	Cent. Uruguay of M. Video	185	19.10.35	857	-	33	16	16,600	13,592	+	3,008	Ord. Stk.	15½	3	4	Nil
	Do. Eastern Extn. ..	211	19.10.35	796	-	64	16	11,861	11,024	+	837	"	—	—	—	—
	Do. Northern Extn. ..	1,218	19.10.35	25,620	+	1,910	16	504,720	499,570	+	5,150	"	—	—	—	—
	Cordoba Central .. .	188	Aug., 1935	16,672	+	1,698	9	30,402	33,155	-	2,753	Ord. Inc.	6	3	2	Nil
	Costa Rica .. .. .	70	Sept., 1935	12,200	+	3,000	39	105,506	90,700	+	14,800	Stk.	305½	23½	34	57½
	Dorada .. .. .	810	19.10.35	9,958	-	2,525	16	191,350	181,699	+	9,651	1 Mt. Db.	103	95	102½	57½
	Entre Rios .. .. .	1,082	19.10.35	10,600	-	1,900	42	309,600	336,500	-	26,900	Ord. Stk.	21½	12	8	Nil
	Great Western of Brazil ..	794	Aug., 1935	\$304,341	+	\$32,953	35	\$3,265,011	\$3,360,090	-	\$95,079	Ord. Sh.	7½	5½	3½	Nil
	International of Cl. Amer.	225½	Sept., 1935	3,560	+	515	39	34,985	32,865	+	2,120	Ist Pref.	1/-	1/-	1½	Nil
	Interoceanic of Mexico ..	1,918	19.10.35	21,931	-	245	42	743,604	933,355	-	189,751	Stk.	123½	79½	81½	Nil
	La Guaira & Caracas ..	483	14.10.35	\$235,700	-	\$15,700	15	\$3,699,100	\$3,327,700	+	\$371,400	Ord. Stk.	145½	7	312	Nil
Leopoldina .. .. .	319	Sept., 1935	5,195	-	3,107	13	15,846	25,851	-	10,005	"	31½	11½	1½	Nil	
Mexican .. .. .	401	15.10.35	7,703	+	117	39	117,857	104,803	+	13,054	Ord. Sh.	32½	51½	21½	Nil	
Midland of Uruguay ..	274	19.10.35	\$1,779,000	+	\$357,000	16	\$30,880,000	\$15,500,000	+	\$15,380,000	Pr. Li. Stk.	84	67	77½	7½	
Nitrate .. .. .	1,059	Sept., 1935	69,275	+	5,502	13	217,772	186,438	+	31,334	Pref.	14½	8	9½	Nil	
Paraguay Central .. .	100	12.10.35	\$9,977	+	\$2,633	15	\$178,542	\$141,991	+	\$36,551	Pr. Li. Db.	75	70	65	71½	
Peruvian Corporation ..	153½	13.10.35	23,520	-	3,300	41	1,042,598	1,115,815	-	73,217	Ord. Stk.	86	67	40	61½	
Salvador .. .. .	164	Sept., 1935	4,305	+	2,470	13	9,250	6,913	+	2,337	Ord. Sh.	2½	17½	15½	7½	
San Paulo .. .. .	1,353	19.10.35	14,782	-	4,105	16	263,638	269,974	-	6,336	Ord. Stk.	6	2	2	Nil	
Taita .. .. .	73	Sept., 1935	580	-	661	13	1,762	3,312	-	1,550	Deb. Stk.	64½	3	41½	Nil	
United of Havana .. .	23,714	14.10.35	825,801	+	179,325	41	26,640,390	25,704,227	+	936,163	"	—	—	—	—	
Canada.	Canadian National ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Grand Trunk .. .. .	17,224	14.10.35	679,400	+	126,400	41	19,750,600	19,254,000	+	496,600	Perp. Dbs.	78½	51½	55½	75½
India.	Assam Bengal .. .. .	1,329	30.9.35	39,367	-	107	26	592,856	697,648	-	104,792	4 p.c. Gar.	104½	97½	96	45½
	Barri Light .. .. .	202	30.9.35	2,730	+	23	26	70,980	75,082	-	4,102	Ord. Stk.	88½	72	78½	315½
	Bengal & North Western ..	2,114	30.9.35	58,400	+	4,841	26	1,213,202	1,215,343	-	2,141	Ord. Sh.	297½	262	294½	57½
	Bengal Dooars & Extension	161	20.9.35	4,608	+	44	24	60,346	68,945	-	8,599	"	125½	124	122½	51½
	Bengal-Nagpur .. .. .	3,268	10.9.35	147,225	+	4,254	22	2,807,897	2,608,739	+	199,158	"	105½	96	101½	315½
	Bombay, Baroda & Cl. India	3,072	10.10.35	237,525	+	21,600	27	4,041,900	4,065,975	-	24,075	"	115	108½	112½	55½
	Madras & South'n Mahratta	3,230	30.9.35	133,350	-	5,605	26	2,678,210	2,958,791	-	280,581	"	131	122½	120½	77½
	Rohilkund & Kumaon ..	546	30.9.35	10,576	+	459	26	231,774	240,434	-	8,660	"	263	250	292½	51½
	South India .. .. .	2,526	29.9.35	106,454	-	15,227	24	1,930,472	2,015,226	-	84,754	"	119	115	114½	69½
Various.	Beira-Umtali .. .. .	204	Aug., 1935	69,967	+	1,369	48	710,272	587,777	+	122,495	"	—	—	—	—
	Bilbao River & Cantabrian	15	Sept., 1935	1,160	-	695	39	13,358	16,195	-	2,837	"	—	—	—	—
	Egyptian Delta .. .. .	622	10.10.35	8,919	+	1,220	27	111,419	112,871	-	1,452	Prf. Sh.	215½	13½	11½	61½
	Great Southern of Spain ..	104	12.10.35	1,352	-	907	41	72,325	90,289	-	17,964	Inc. Deb.	4	3½	3½	Nil
	Kenya & Uganda .. .	1,625	Sept., 1935	166,857	+	17,443	39	1,808,941	1,694,916	+	114,025	"	—	—	—	—
	Manila .. .. .	913	Aug., 1935	117,688	-	2,319	48	1,277,362	1,076,622	+	239,740	B. Deb.	50	33	37	97½
	Maschaland .. .. .	277	Aug., 1935	12,044	-	2,011	9	23,052	25,952	+	2,900	1 Mg. Db.	101	91½	101½	415½
	Midland of W. Australia ..	1,905	31.3.35	17,607	-	7,766	22	510,777	571,999	-	61,222	Inc. Deb.	100	93	94½	56½
	Nigerian .. .. .	1,538	Aug., 1935	203,069	+	5,376	48	2,125,732	1,808,818	+	316,914	4 p.c. Db.	1047½	97½	104	315½
	Rhodesia .. .. .	13,225	28.9.35	595,621	+	48,832	26	14,296,124	12,981,601	+	1,314,523	"	—	—	—	—
	South African .. .. .	4,728	June, 1935	686,838	-	6,716	52	9,421,092	9,175,111	+	245,981	"	—	—	—	—
	Victorian .. .. .	112	Aug., 1935	12,102	+	955	35	88,575	88,009	+	566	"	—	—	—	—
Zafra & Huelva .. .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1½

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over-estimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value